FACILITY PLAN ADDENDUM

TETON VALLEY
REGIONAL WATER RECLAMATION FACILITY
UPGRADE

APRIL 2010

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EXECUTIVE SUMMARY

Aqua Engineering was contracted by the City of Driggs to assist in looking at the current treatment plant operations, to review the 2006 Driggs Facilities Plan produced by Nelson Engineering, and to investigate more economical alternatives to upgrade the existing water reclamation facility (WRF) located in Driggs, Idaho. Upgrades to the current facility are recommended to accommodate future growth and to address permit level exceedances for discharge effluent constituents that have occurred with the current process.

Several minor upgrades have been completed over the past two years including: adding surface aerators to the lagoons, dividing the first pond with a curtain, replacing the lift station flow meters, upgrading the main pump station, installing a new headworks screen (installed in summer of 2009). A new treatment system was also piloted. While these upgrades were taking place, it became apparent that the 6 to 10% growth rates that many thought would occur never materialized. Data from the existing WRF, lift stations, and the pilot plant study were analyzed to determine average and peak flow rates, biochemical oxygen demand (BOD) loads, and other critical design points. A new upgrade alternative was investigated that would allow the WRF to reliably and consistently meet effluent discharge limits while accommodating for future influent flows. Ultimately, a design alternative utilizing a Multi-stage Activated Biological Process (MSABP), based on the pilot plant that was run at the WRF, was selected.

Upon reviewing the recommendations from the 2006 Facilities Plan, it was determined that the original growth projections were being driven by the numerous developments being planned and constructed that, if successful, would easily double the population of the area within ten years. The 2006 estimates were based on relatively high initial growth rates of 6%. These estimates predicted that by 2010, the number of people served by the WRF would grow from 3,600 to over 7,200. However, current population estimates conclude that the population served by the WRF is still around 3,600. This assumes a population of 1,700 from Driggs, 1,500 from Victor, and an additional 400 people from the unincorporated areas in the County are connected to the WRF. Further evaluation and comparison with other long-term growth rates for the area show that a 2 to 4% growth rate is more realistic. These growth rates predict that the population connected to the WRF in 2030 will be between 5,456 and 8,204 persons.

Difficulties in obtaining accurate flow data were discovered as discrepancies between plant influent measurements, plant effluent measurements, and lift station measurements are present throughout the data set. The flow meters servicing the main and south lift stations were replaced in late 2008, and the data from these lift stations appear to be more consistent and accurate than the data from the WRF. Estimates on per capita flow rates and seasonal trends were established through careful analysis of all the data submitted.

Over the past several years, summer flows have averaged 370,000 gallons per day (gpd), with maximum monthly flows frequently exceeding 600,000 gpd. The higher flows in the summer are most likely caused by infiltration and inflow into the sewer system from higher groundwater levels, large precipitation events, and local agricultural activity. From early to mid-summer, runoff from the mountains causes the groundwater level to rise, increasing infiltration into the sewer system. Higher flows from the main lift station, which services Driggs, are also present from November to January. This is caused by individuals leaving water running to prevent pipes from freezing. With roughly 3,600 people currently served by the WRF, and based on the most recent flow data from the new lift station flow meters (September 2008 through December 2009), the overall average daily flow is around 400,000 gallons. Thus, the average flow per person is roughly 110 gpd. During the high flow months, flows increase about 200,000 gpd. Seasons such as 2009 with record breaking precipitation showed infiltration and inflow increased flows up to 500,000 gpd, though these events are rare and not considered representative of normal trends. Ideally, the situations causing these increases will be somewhat mitigated over time reducing their impact on influent hydraulic loads. At a minimum, the infiltration and inflow rate are not expected to increase with population growth.

Using these per capita flow assumptions, by 2030 the average daily influent flows will range from 600,000 to 900,000 gpd, with maximum monthly flows at 1.1 million gallons per day (MGD). Using a peaking factor of 2.0, the 2030 peak hour flow could be as high as 1.8 MGD during average months and 2.0 MGD maximum monthly flows.

Other design parameters include influent BOD, total suspended solids (TSS), and nitrogen/ammonia (as TKN). Influent BOD measured at the pilot plant averaged 230 mg/l. Based on influent flows, this equates to 668 pounds of BOD per day, or 0.185 pounds of BOD per person per day, which is reasonable. Some data, however, indicate that BOD levels can average 330 mg/l or more, which equates to 0.26+ pounds of BOD per person per day. This number is higher than expected and indicate potential for some industrial or other non-residential users connected to the system. The last two years of data have shown lower average BOD concentrations around 270 mg/l. To be conservative, 330 mg/l will be used for the design influent BOD concentration. Influent TSS averaged 180 mg/l, and influent ammonia averaged 31 mg/l. Design values of 200 mg/l for TSS and 35 mg/l for TKN were established, both of these values are typical of residential wastewater.

Based on the data gathered, and with the desire to be conservative, the initial upgrade will increase capacity to 0.9 MGD average daily flow based on the larger 4% growth rate. The maximum monthly flow will be 1.1 MGD with a design peak hour flow of 2.0 MGD. The design will also be easily expandable to 1.35 MGD average daily flow.

The proposed upgrade will include a new headworks building with either Salsnes belt filters or fine (1mm) screens with grit removal, two MSABP basins with room for a future third basin, and a UV disinfection building to house the blowers, UV disinfection modules, and disk filter equipment. Depending on the options selected, it is estimated that these upgrades will cost between $7.8 and $8.6 million, including equipment, construction, design, engineering, and 10% contingency costs.

The MSABP alternative has many advantages over conventional treatment systems. As there is no clarification, it is sized based on biological loading and will not be affected by maximum month flows experienced at the facility. Other advantages include no sludge production, consistently high effluent quality, and low susceptibility to varying hydraulic loads. This technology is very cost effective as even when influent flows are higher in the summer months, the MSABP process will handle the higher flows as long as sufficient biological capacity is available. The MSABP process can be expanded as future growth necessitates. The headworks, disk filters and UV disinfection processes will be sized to handle the peak hydraulic loads, allowing this configuration to be very flexible in terms of varying influent flows. This upgrade will allow the WRF to reliably treat influent loads and meet permit levels through 2030.

At this time, the Total Maximum Daily Load (TMDL) study completed in 2003 did not list phosphorous as a concern for this segment of the Teton River. However, if a phosphorous limit is required in the future, the MSABP process does not remove phosphorous biologically. A chemical addition system consisting of a chemical tank, a flocculation chamber, and an inclined plate clarifier would have to be added to the system. The disk filter would act as a polishing device to get phosphorous down to 0.1 mg/l if needed. The backwash for the disk filter and the clarifier underdrain would be sent to the existing ponds. The ponds would also serve as emergency overflow for extremely high influent loads. After many years, the ponds would be dredged and the waste sludge dewatered. This alternative is still much more economical than building a solids storage and dewatering system.

While the disk filters are not needed to meet the expected NPDES permit level of 30 mg/l of BOD and TSS, it is proposed to install them to increase the effectiveness of the ultraviolet (UV) disinfection system. The existing lagoons will be kept and used as emergency bypass and to handle backwash from the disk filters. The lagoons will not be allowed to discharge except under extreme emergencies.

CHAPTER 1 - INTRODUCTION

The purpose of this report addendum is to provide updated growth estimates and design criteria to those presented in the original design report prepared in March, 2006 by Nelson Engineering. This addendum provides additional data and clarification to:

- Present and justify the design criteria for upgrades at the Teton Valley Regional Water Reclamation Facility (WRF);
- Introduce and explain the recommended treatment technology;
- Present a preliminary design and layout for the upgrade including initial cost estimates.

Influent flow data from the WRF and pilot plant, along with influent BOD_5, TSS, and nitrogen measurements are presented to establish the design criteria used for the WRF upgrade. Furthermore, current influent flow rates, including data from the lift stations after repairs were completed to increase their accuracy, are used with the estimated growth rates of the service area to determine future influent flows and loads. This evaluation assists in establishing the 20-year design criteria to ensure that the WRF will be able to handle the anticipated future loads from the service area.

In addition, the Multi-Stage Activated Biological Process (MSABP) treatment technology, as manufactured by Aquarius, is presented and explained in more detail. The results of the pilot plant installed at the WRF which utilized this technology are also discussed. Finally, a preliminary design layout is presented along with capital, operation and maintenance cost estimates.

CHAPTER 2 - EXISTING CONDITIONS AND PROJECTED GROWTH

2.1 Existing Conditions and Influent Flow Data

The WRF currently services areas throughout Teton County, with most of the connections located in the cities of Driggs and Victor. Though many of the residences outside of these cities are on septic systems, it is estimated that up to 66% of all existing and future connections in the County could be serviced by the WRF (Nelson Engineering, 2006).

The Driggs Idaho WRF is not typical of most rural communities as some of the homes encompassed in the service area are second or vacation homes. The population of Teton County is estimated to be 30-50% greater than the base population during summer months and around the Christmas/ski season (Nelson Engineering, 2006). Thus, flows and loading can be more variable than a typical residential area with a more stable population base. The impact of non-permanent residents is difficult to predict as many of the second homes are on septic systems that do not impact the WRF. The following sections discuss the most recent data from the WRF.

The existing WRF is discussed in detail in the 2006 report developed by Nelson Engineering. This report focuses on the existing influent, BOD, TSS and nitrogen loads recorded at the plant using data from 2006 through December 2009. This analysis provides the most recent data available to guide the design criteria for the expansions and upgrades necessary at the WRF.

2.1.1 Influent Flow

Monthly average influent flow data collected from January 2006 through December 2009 at the WRF and the main and south lift stations, show high variability (Figure 2-1). Measurements from the influent flume at the WRF and the flow meters at the two lift stations should be equal, but do not always correspond. The lift station flow rates after the lift station flow meters were replaced in late 2008 do show some change, but are still more consistent than influent or effluent flow data from the WRF. Thus, it appears that the lift station flow meter data are more accurate than the influent flume measurements from the WRF. Data from both the flow meters and the influent flume show periods of questionable measurements, which make establishing flow trends more difficult.

Note that values from the main (Driggs) lift station are higher after the flow meters were replaced in late 2008. This indicates that flows from Driggs may have been underestimated prior to replacement of the flow meter, although unusually high infiltrations rates noted in 2009 make it difficult to determine if older flow meter data were inaccurate. Conversely, flow data from the south (Victor) lift station does not change significantly after the flow meter replacement. Understanding data from 2009 is further complicated by the large amount of precipitation in June 2009 that resulted in more groundwater infiltration into the system, especially from the Driggs area.

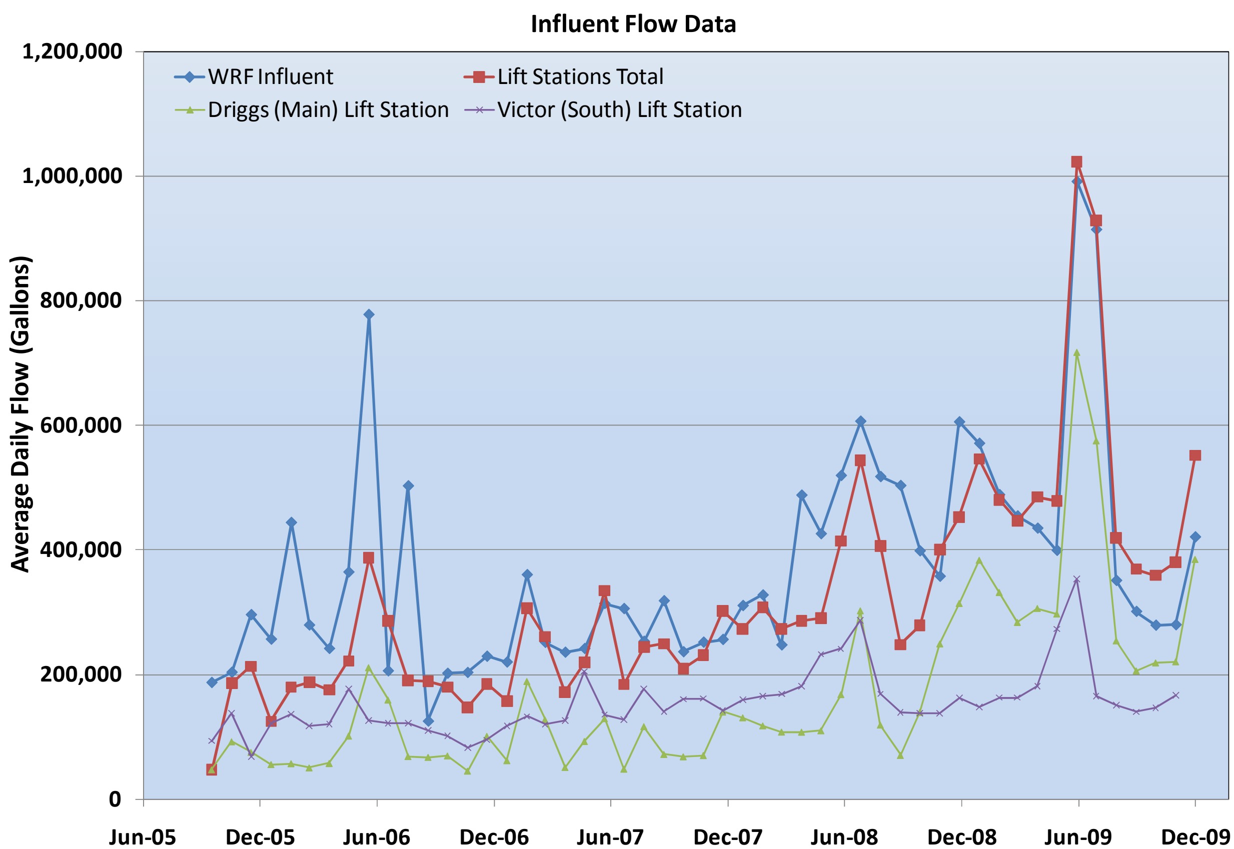

Figure 2-1: Influent flow data measured at the plant and regional lift stations.

Influent flows from the last three years of data vary widely from less than 200,000 gpd to over 1,000,000 gpd with most months still less than 500,000. However, two interesting trends were observed in the data. First, flows appear to be higher in the summer, especially in June and July. The summer peak flow is notable at both lift stations. Second, influent from the main (Driggs) lift station increases in winter months, especially December and January, though these winter peaks are not generally as large as those recorded in the summer.

Analysis of additional lift station data, going back to January of 2001, shows that the summer peak flow rates are fairly consistent (Figure 2-2). Average daily flow rates in the summer are typically 200,000 gpd higher than the overall average flow rate, though data from 2008 and 2009 show these summer peaks are even larger. Nonetheless, the overage appears to be independent of the year or population, indicating a non-anthropogenic source for these summer peak flows. Discussion with local City and County officials revealed that the groundwater table tends to rise in early summer and stay higher through July. Several reasons for this have been proposed. The largest contributors include snowmelt and runoff from nearby mountains, late spring and early summer precipitation events, and local agricultural/irrigation activity. This reasoning is further supported as the exceptionally large summer peak in 2009 is concurrent with one of the wettest Junes (400%+ of average precipitation) on record for the area. Thus, it is concluded that the summer peaks are mainly caused by infiltration and inflow into the sewer system during periods of high runoff, precipitation, and irrigation that can correspond with a rise in groundwater levels.

The high winter flows recorded at the Driggs lift station are most likely due to residents leaving taps running to prevent freezing. Anomalously high flows were recorded by the WRF influent flume in April of 2005 and 2006, and in August of 2006. However, data from the lift station flow meters indicate that flows were not as high, further indicating a consistency problem with the influent flume at the plant. Some increase in flow can be attributed to summer and winter tourist seasons. However, summer tourist season extends from May through August, but the extreme summer peaks only occur in June and July. Furthermore, peak tourist ski season runs late November through the rest of winter (March), but the larger winter flows occur mainly in December and January. This is further evidence that the peak summer and winter flows are most likely caused by infiltration and users leaving some water running respectively.

Prior to replacing the lift station flow meters, measured flow averaged 290,000 gpd, with summer maximum monthly flows ranging from 350,000 to 540,000 gpd. However, upon replacing the flow meters, measured flows from the Driggs lift station increased. Accordingly, flow measurements taken after September 2008 average nearly 400,000 gpd. As mentioned previously, the large peak from June/July 2009 is considered an anomaly associated with the unusually high rainfall and not representative of typical peak summer flow events. Average flows from August through November 2009 drop back down to around 360,000 gpd, likely indicative of groundwater levels finally decreasing (thus reducing infiltration). December 2009 flows increased again at the Driggs lift station, associated with residents leaving their taps running to prevent pipe freezing and the holiday tourist season.

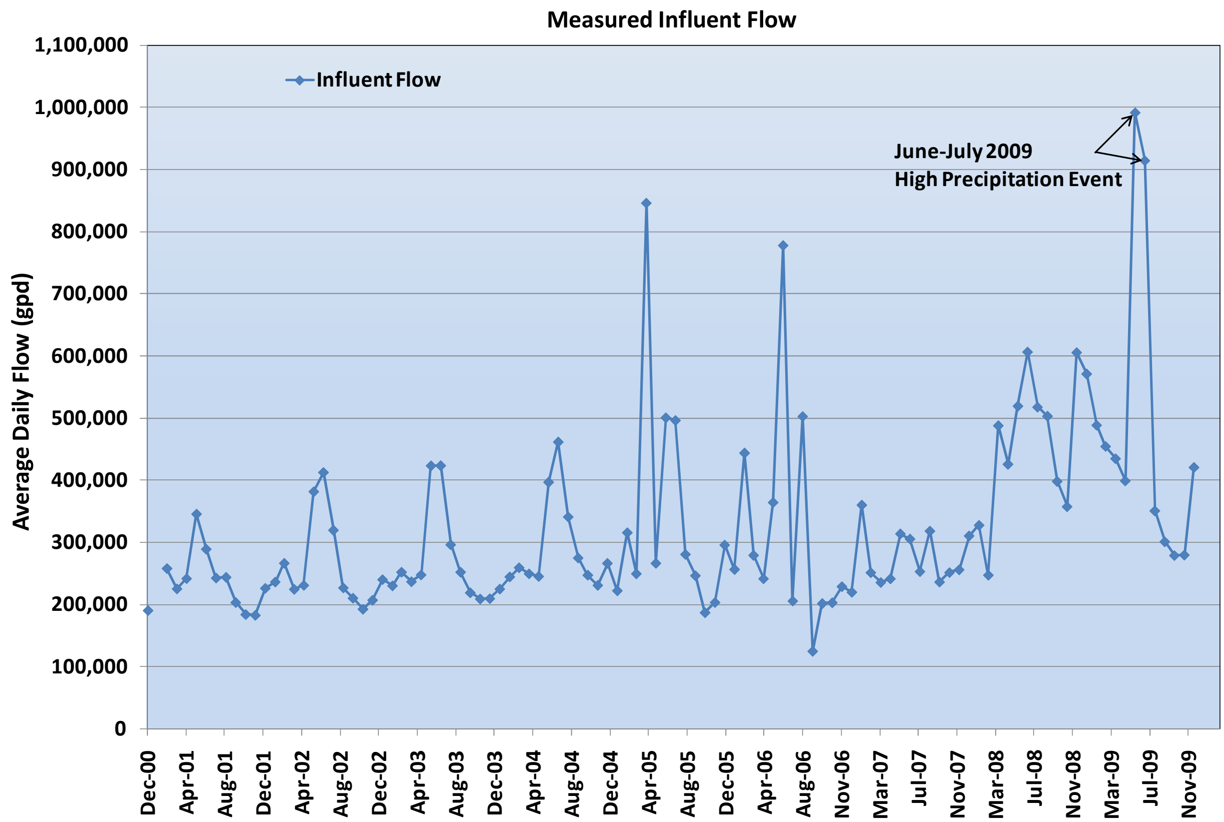

Figure 2-2: Long-term influent data from the WRF influent flume.

Finally, Figure 2-1 shows the proportion of influent contributed by each city. In general, Victor's influent has accounted from 30 to 70% of the total influent into the plant. Extreme highs and lows for this number are usually related to summer infiltration, which can vary from year to year in terms of which city has the highest infiltration flow. Overall, Victor averages right around 50% of the total influent flow. For 2009 when Driggs had record high infiltration, Victor averaged roughly 40% of the total influent. This number is significant in that it will help establish a future agreement and ownership between the two cities.

2.1.2 Influent and Effluent BOD_5

Influent BOD data from 2006 through 2009 are also highly variable (Figure 2-3). The overall average influent BOD measured at the plant is 330 mg/L, including the maximum value of 1,050 mg/L for June of 2007. By removing the 1,050 data point as an outlier, influent BOD averages 310 mg/L. Monthly influent BOD averages typically ranged from around 200 to 400 mg/L, with all but two months measuring below 475 mg/L. Influent BOD during the pilot study (June through November of 2008) was considerably lower as noted in both the plant and pilot plant data, averaging 230 mg/L (Figure 2-4). Effluent BOD concentrations are typically less than 35 mg/L, though 10 months in the past 4 years reported effluent values greater than the existing permit maximum of 45 mg/L. These exceedances have been the primary focus of two Notices of Violation (NOV) received by the City of Driggs from the EPA in 2005 and 2009. Effluent measurements from the pilot plant are discussed in Chapter 4.

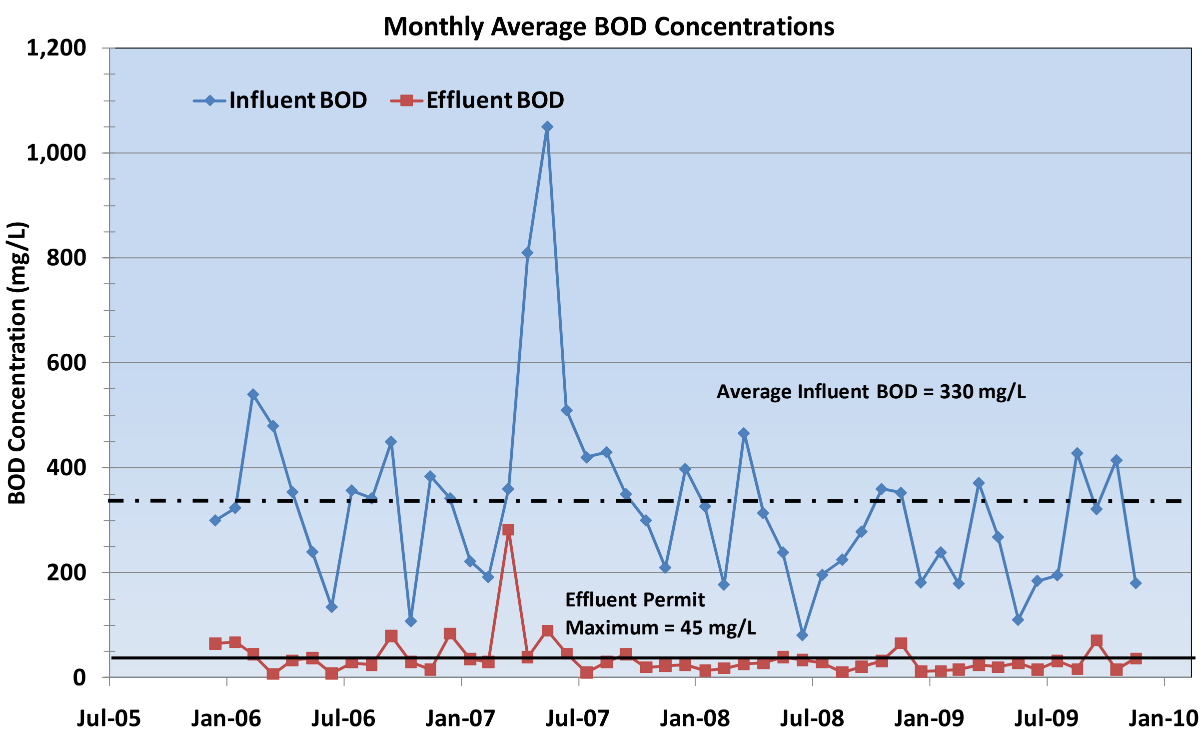

Figure 2-3: Influent and effluent BOD data from the existing plant.

Combining BOD concentrations with the influent flow data yields the actual average daily BOD load, in pounds per day, at the WWTP (Figure 2-5). Average daily loading (based on monthly data) is around 900 pounds per day. Again, the load varies substantially with almost all of the data falling between 500 and 1,500 pounds per day. Assuming a base population of 3,600 connected users, this equates to roughly 0.25 pounds of BOD per person per day. Typical values range between 0.17 and 0.20 pounds of BOD per person per day, so the data indicate that BOD loads are higher than would be expected. Unlike the influent flow data, there do not appear to be any seasonal trends for BOD concentrations or average daily loading. The higher BOD loads may indicate some industrial users. In 2009, it was determined that a brewery located in Victor is actually connected to the sewer system; this may account for, at least in part, the higher than normal BOD loads measured at the plant.

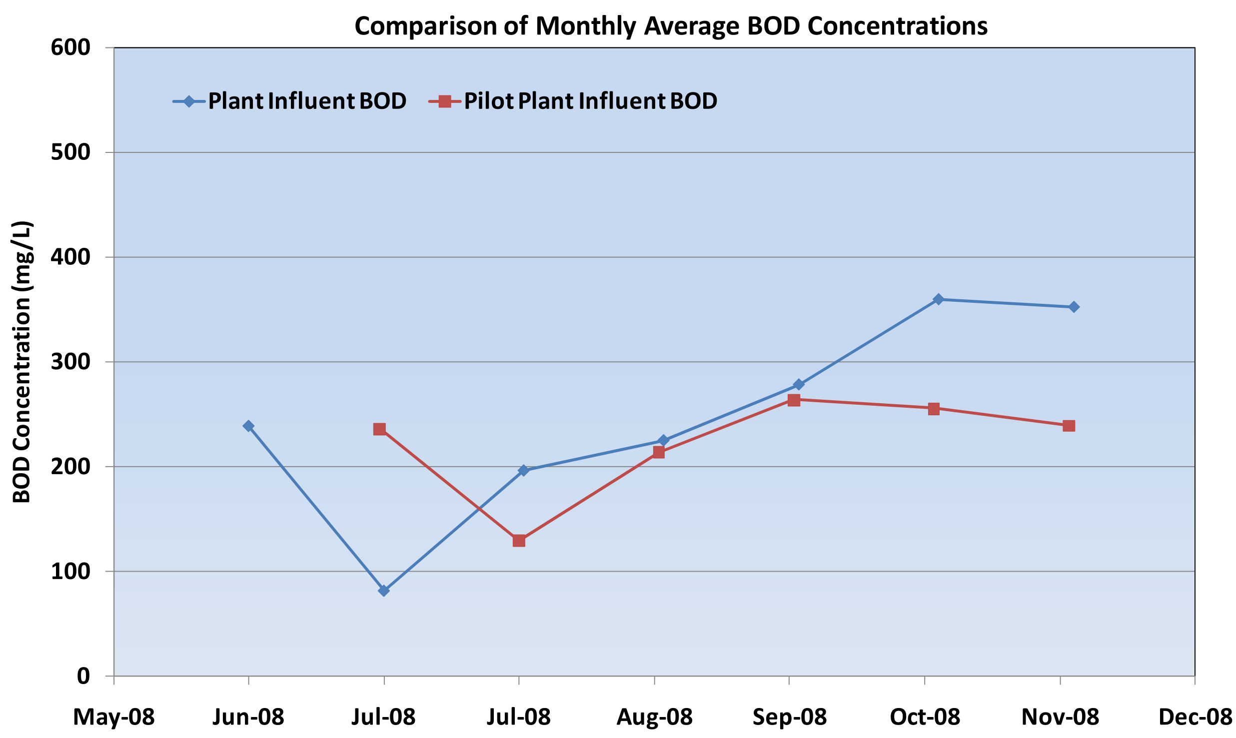

Figure 2-4: Influent BOD from the plant and pilot plant.

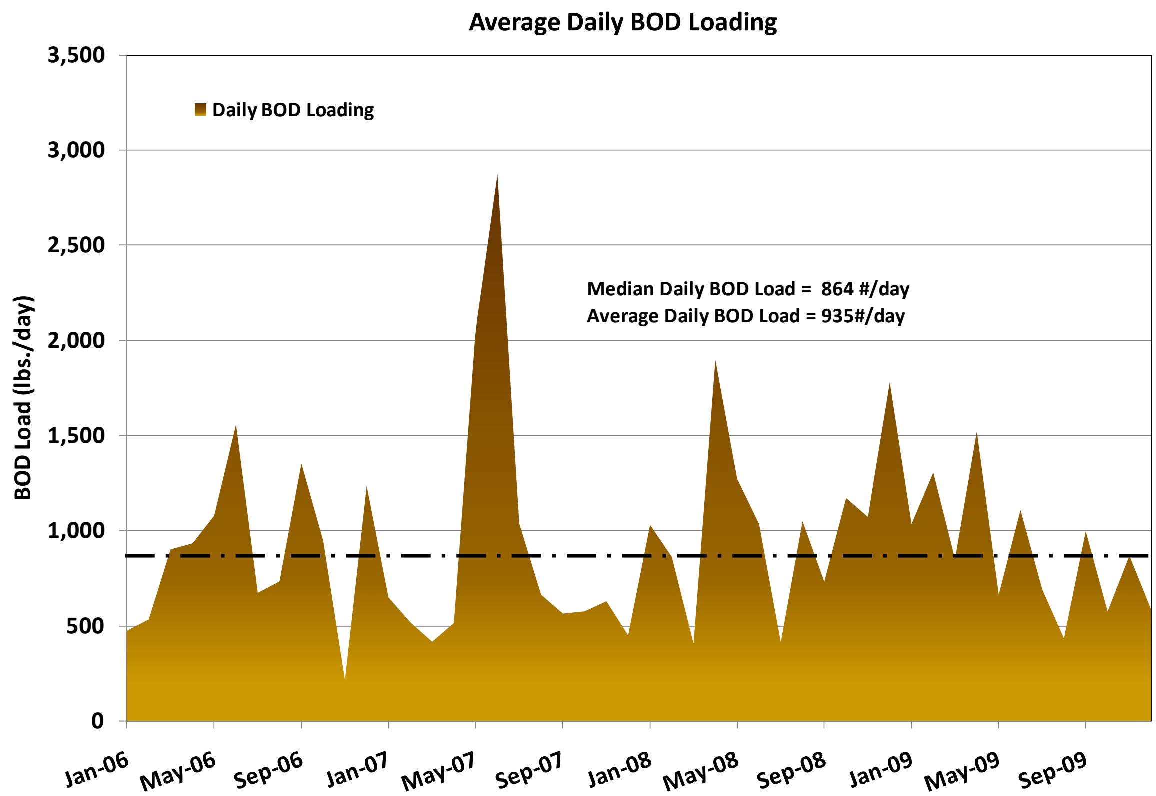

Figure 2-5: Monthly average BOD loads.

2.1.3 Influent and Effluent TSS

The measured TSS data are also variable, with values ranging from 45 to 854 mg/L (Figure 2-6). The overall monthly average TSS concentration is 285 mg/L, with a median value of 240 mg/L and 90% of the data points below 500 mg/L. The data show that 2008 and 2009 had significantly lower TSS concentrations than the previous two years, with the average value around 200 mg/L and only three month reporting over 400 mg/L. Data from the pilot plant (June through November of 2008) also show a lower TSS concentration of around 180 mg/L. Effluent TSS concentrations were relatively stable, with average concentrations around 30 mg/L for the entire data set. None of the monthly effluent averages for TSS are over the current permit level of 70 mg/L. Effluent TSS data from the pilot plant are discussed in Chapter 4.

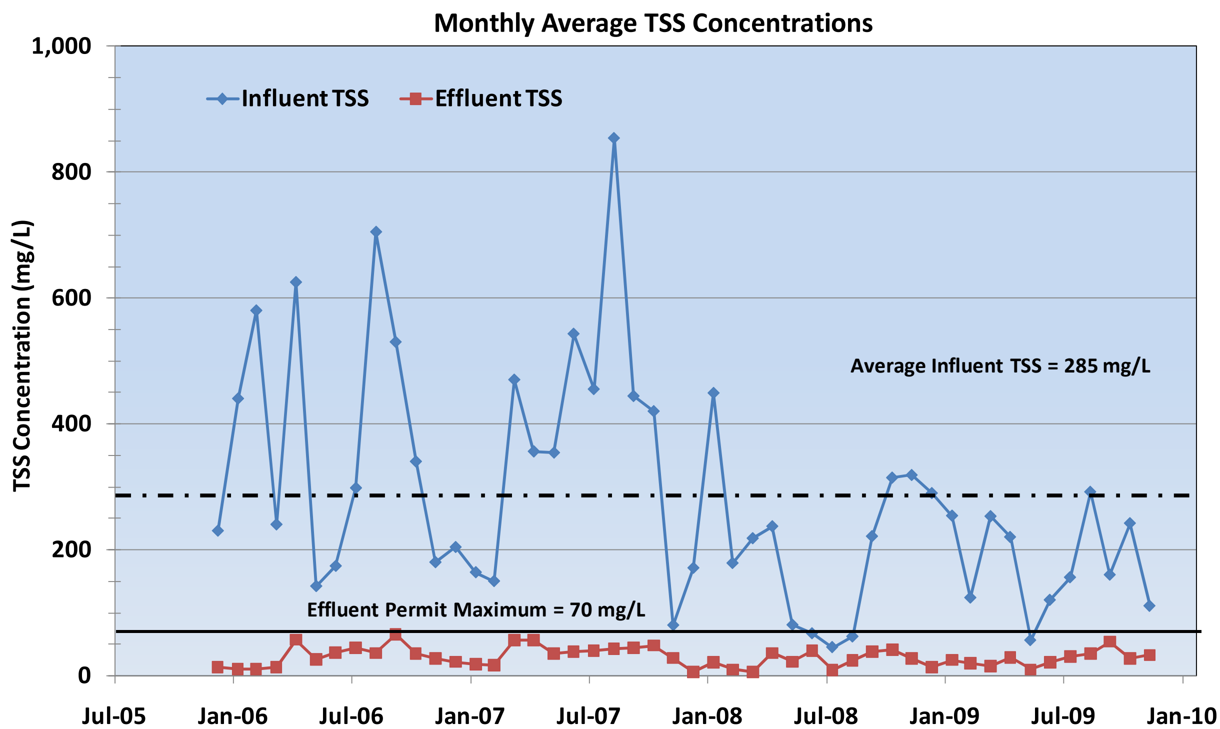

Figure 2-6: Influent and effluent TSS data from the existing plant.

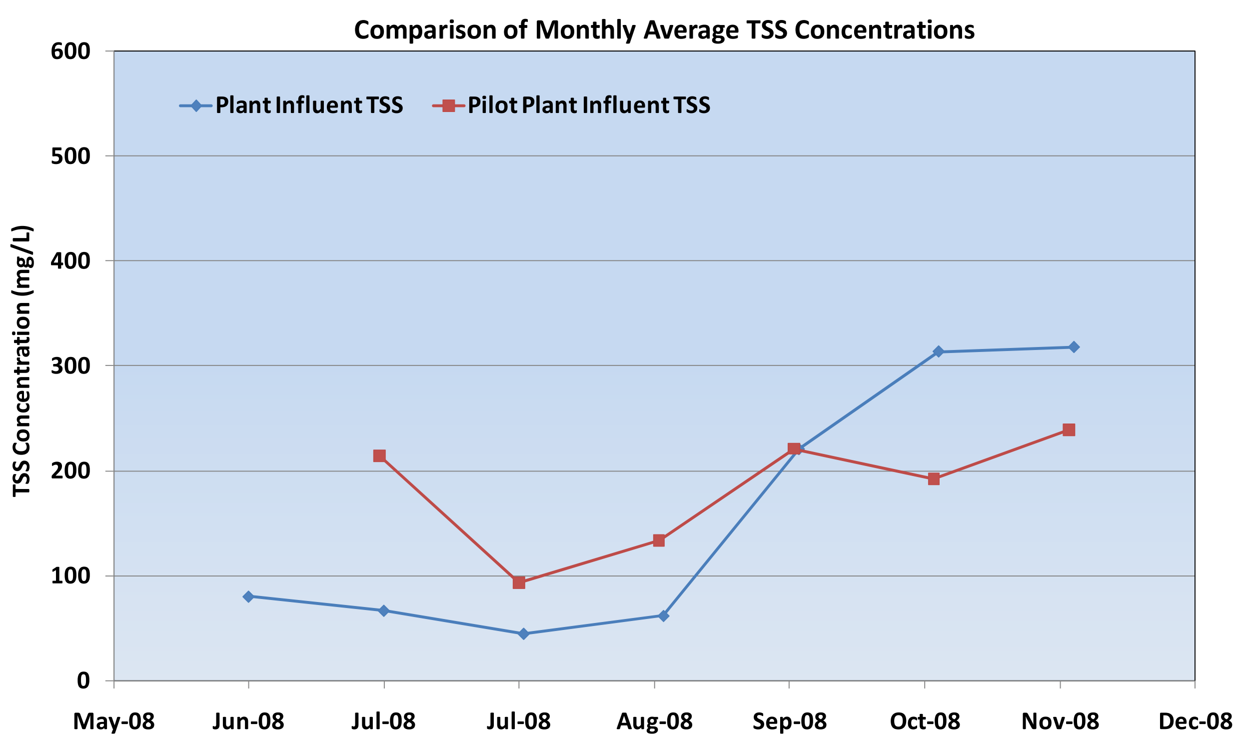

Figure 2-7: Influent TSS from the plant and pilot plant.

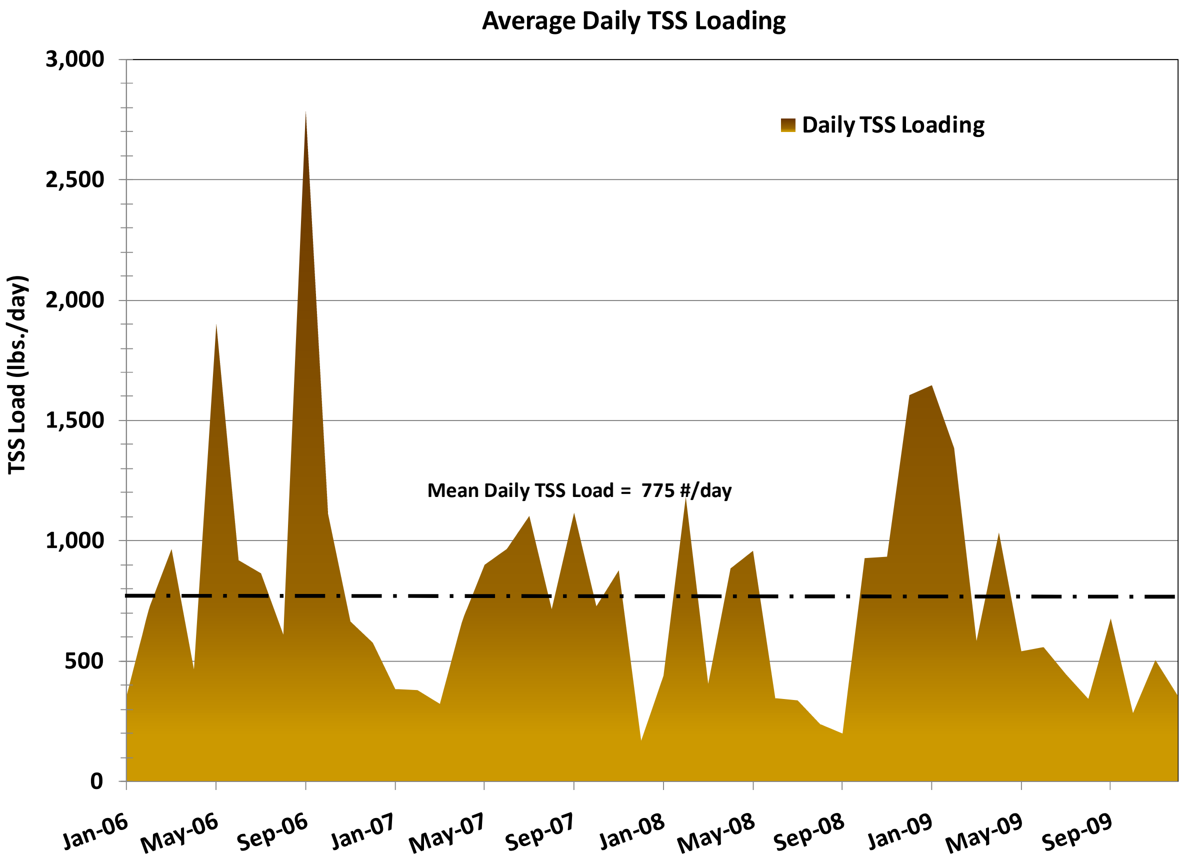

Figure 2-8: Monthly average TSS loads.

As with BOD, combining TSS concentrations with the influent flow data yields the actual average daily TSS load, in pounds per day, at the WWTP (Figure 2-8). Average daily loading (based on monthly data) is around 800 pounds per day. Again, the load varies substantially, however all but three data points are less than 1,250 pounds per day. Other than May and September of 2006, the average daily TSS loads are more consistent and fall between 500 and 1,100 mg/L.

2.1.4 Influent and Effluent Nitrogen

Data for influent nitrogen or Total Kjeldahl Nitrogen (TKN) concentrations are not available as this parameter has not been regularly measured at the WWTP. Limited influent ammonia (NH_3) data were recorded at the pilot plant from June through November of 2008 (Figure 2-9). Influent ammonia concentrations averaged around 31.5 mg/L, with several individual days recording values around 40 mg/L. Effluent nitrogen measurements for ammonia and nitrate (NO_3) taken from the pilot plant are discussed in Chapter 4.

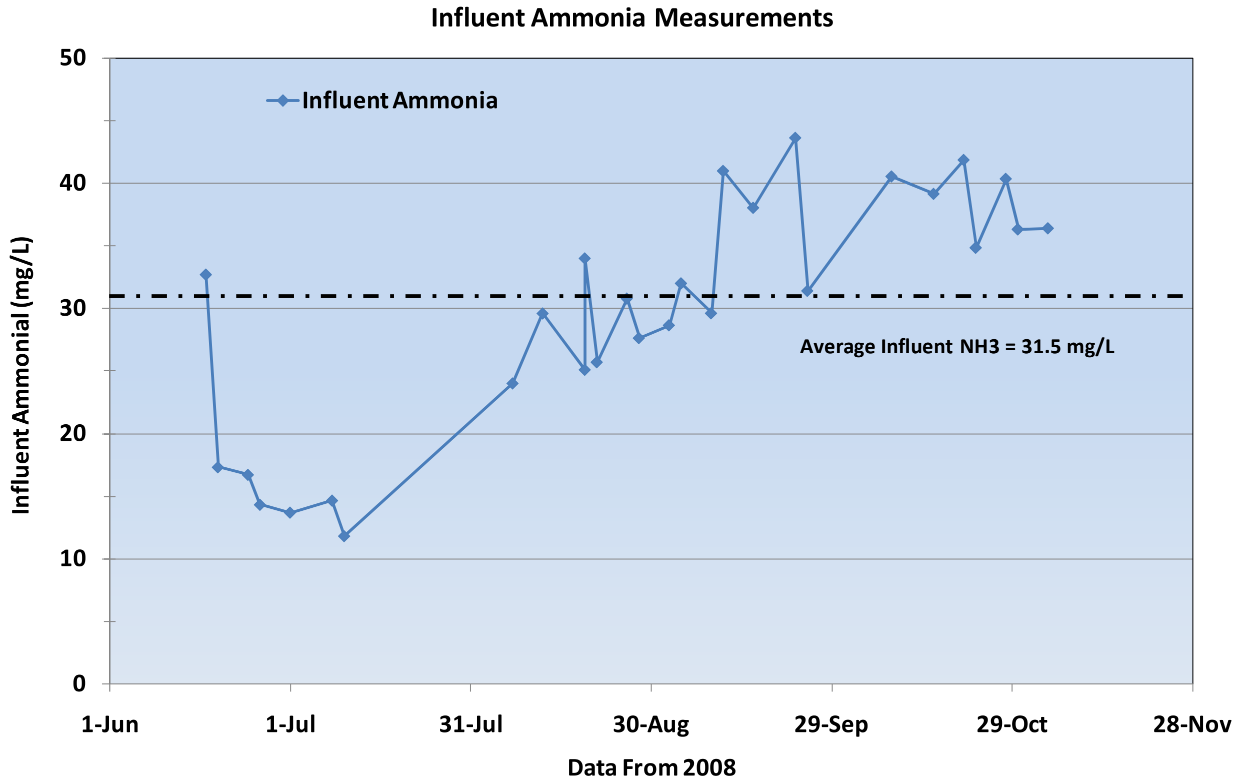

Figure 2-9: Influent ammonia measurements from the pilot plant.

2.1.5 Other Measured Parameters

Other parameters measured and recorded at the WRF included minimum and maximum effluent pH levels, effluent temperature, effluent coliform and/or e.coli concentrations, and residual chlorine levels. Several of these effluent parameters exceeded permit levels multiple times, further indicating the need to upgrade the existing WRF. Effluent violations were included in the NOVs received by the City. Effluent parameter violations noted in the NOVs include: fecal coliform, e.coli, pH and residual chlorine. Effluent fecal coliform exceeded the maximum monthly limit of 200 coliform forming units (cfu) per 100mL in July and September of 2008 and June 2009, with reported values of 2,200, 374, and 593 cfu/100mL respectively. E.coli measurements exceeded the maximum monthly limit of 126 cfu/100mL in July of 2008 and June of 2009, with a reported value of 833 and 176 cfu/100mL respectively. Issues with pH have been correlated with problems calibrating new equipment, and have been a one-time occurrence. Problems between residual chlorine and total coliforms/e. coli indicate problems in handling chlorination and dechlorination levels at the plant. These occurrences appear to be infrequent, but may indicate that the current process is not as consistent as it should be. A table of all data recorded at the WRF from 2006 through 2009 used in this report is provided in the appendix.

Overall, it appears that the lagoon aeration system is having trouble dealing with BOD loads and complying with effluent requirements for BOD which also results in problems with fecal coliform and e.coli. Several effluent monthly averages report values that are above current permit levels. Thus, in addition to expanding the capacity of the WRF, the treatment technology should be upgraded as well to ensure that effluent will consistently meet permit requirements and to avoid possible penalties. Moreover, the upgraded facility must be capable of handling widely variable hydraulic loads without adversely affecting its ability to remove BOD, TSS, coliforms, and other constituents from the wastewater.

2.2 Existing Service Area and Projected Growth

The WRF currently receives raw wastewater from the cities of Driggs, Victor, and the unincorporated Teton County urban service and urban reserve areas. Many of the residences outside of Driggs and Victor are on septic systems, though a population of 200-400 is reportedly connected to the WRF at this time. Housing in the cities of Driggs and Victor consists mainly of single family homes that are owner occupied or rented to individuals or single families. Secondary and vacation homes, with seasonal occupants are more prevalent in the unincorporated areas of Teton County than within the cities. Maximum occupancy of the vacation homes occurs in the summer (July and August) months and the winter holiday/ski season. As discussed in section 2.1, this variation in population can translate to higher variability in wastewater flows at the WRF, though many of the second homes are on septic systems.

2.2.1 Service Area Population and Influent Flow

The service areas of Teton County are discussed in detail in the 2006 facilities report, but the population, measured flows, and number of connections, are discussed here to help develop the design criteria for the WRF. After analyzing the most recent flow data from the WRF and the current population that it serves, estimates on current and future flows were established. The current populations of Driggs and Victor are estimated to be roughly 1,700 and 1,500 people respectively. The majority of connections outside of these two cities are on septic systems, and are not serviced by the WRF. However, it is estimated that roughly 200 to 400 people living outside of Driggs and Victor are connected to the WRF. The most recent information available regarding equivalent residential connections (ERCs) from each City supports these population estimates. Thus, the current total population (2009 estimate) served by the plant is approximately 3,600 people.

As of mid 2009, Driggs has an estimated 657 connections to the sewer system, including 63 residential and 20 commercial connections located outside of City boundaries. Commercial connections range in size from ¾" to 6" diameter connections. These are actual connections and do not represent ERCs as some of the larger commercial connections will count as multiple ERCs. Based on usage and user fee revenue, these connections represent an estimated 775 ERCs total in the Driggs and surrounding unincorporated area associated with Driggs.

Victor reports 761 total ERCs including 647 within city limits, 102 outside of the city limits, and another 12 from the Teton Springs development. Teton Springs has potential to expand to 342 ERCs eventually, but development at this area has suspended indefinitely and it will likely be many years before this area sees any significant growth. Victor does not report actual connections as each new connection is assigned an equivalent ERC at installation. Each ERC represents a *potential* flow of 300 gpd. Thus, a large apartment complex or commercial connection may be considered as multiple ERCs (i.e. 3,000 gpd potential flow would equate to 10 ERCs). Details regarding ERC connections and user rates for both cities are discussed in Chapter 6.

In summary the two cities including out of City connections report a total 1,536 ERCs. A general rule for rural developments is to assume 2.5 persons per ERC. This would estimate a population of 3,840, very close to the population estimates discussed previously. However, several of these connections and ERCs are reported as "inactive", meaning that the structure and connection is built, but there are no current users/residents at the location and the respective city may not be collecting user fees for the connection. Thus, the population estimate of 3,600 seems reasonable.

Influent flow data from the WRF analyzed from January 2006 through December 2009 show an overall median of 286,000 gallons per day (0.286 MGD) with the largest peak flows occurring primarily in June and July. Excluding 2009, summer flows have averaged 343,000 gpd, with the maximum month averaging 370,000 gpd. The monthly influent average ranged from 0.157 to 1.0 MGD with summer flows typically averaging 200,000 gpd more than the annual average flow for a given year. As discussed in section 2.1, this trend is noted back through 2001, and appears to be the result of groundwater infiltration and inflow into the system during periods of high groundwater levels. Incorporating data from 2009 is more difficult due to the high precipitation and resultant infiltration into the system. However, even when excluding data from June and July 2009, the average flow for this year is over 400,000 gpd. Average monthly flows drop back below 400,000 gpd starting in September 2009, a possible indication of the lag time for groundwater levels to drop after the wet summer. Based on current user connections and population data, 400,000 gpd is considered a conservative estimate for average monthly flows.

Assuming the current connected population estimate of 3,600, an average flow of approximately 110 gallons per person per day is established. This is a reasonable number for rural and small residential communities. Using this daily flow per capita estimate, future influent flows at the WRF can be estimated.

Population growth estimates for Teton County, including Driggs and Victor, have had a wide range of reported values. In recent years estimates have been as high as 7-10%. However, consider that 9 years ago in Victor, a 10% growth rate would amount to only an additional 70-80 people moving into the city (based on an initial population of 700-800 people), and it is not reasonable to assume that such a large growth rate would be sustainable over 10+ years. Recent economic slowdowns have significantly slowed growth in Teton County, and it is much more likely that a more conservative growth rate will represent future populations in the area. In reality, the reported connected population in 2006 was estimated to be 3,600, or roughly the same number estimated for today. This indicates that the service area has undergone little to no net growth over the past three years.

The 2006 Facilities Plan, provided by Nelson Engineering, assumes an initial growth rate of 5.8%, gradually slowing to 3.8% by 2015. These estimates predicted that by 2010, roughly 7,200 people would be connected to the WRF. However, the most recent population and flow evaluation shows that the connected population is still around 3,600 people, indicating that these higher growth rates have not occurred. Based on more recent estimates from city planners and current building activity in the area, the growth is anticipated to fall between 2 and 4%. These numbers are more representative of the current and long-term situation in Teton County, and agree better with estimates from the Idaho Department of Commerce and US Census Bureau. Based on these growth rates, the population served by the WRF by 2030 will be between 5,456 and 8,204 people (Figure 2-10).

Finally, using the flow per capita estimate of 110 gpd/person, the increase in demand at the WRF is established. Using these growth models, average daily influent flow at the WRF will be between 600,000 and 900,000 gallons per day, with maximum months adding an additional 200,000 gpd. The current rated capacity of the lagoon system is 600,000 gallons per day and is not sufficient to handle the expected 20-year growth. This capacity is frequently exceeded during peak infiltration months and the existing treatment process does not handle shock hydraulic loads very well. The fact that effluent water quality data show the current system does not reliably meet effluent BOD_5 and fecal coliform/e.coli permit limits further indicate the system has reached its practical capacity. As a result, it is recommended that the WRF be upgraded to a system that will consistently meet effluent criteria (including new ammonia limits) and handle larger influent flows. The system should be easily expandable, so that the WRF can grow with demand without forcing large, upfront capital costs on existing users.

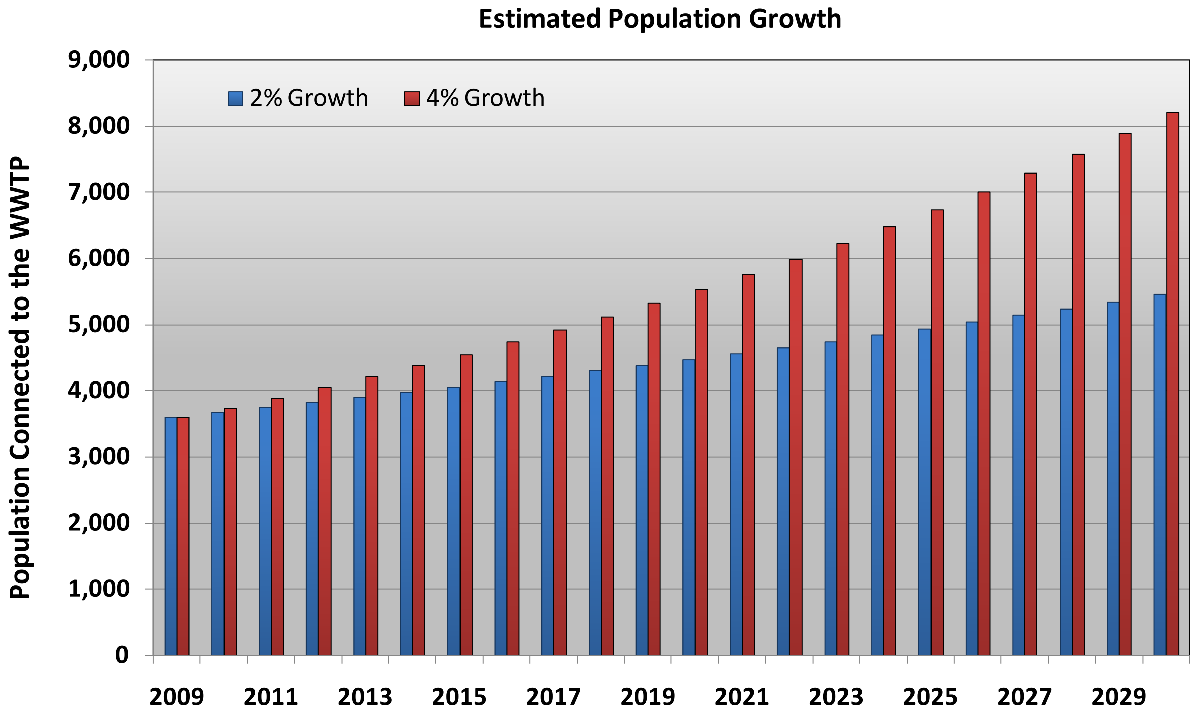

Figure 2-10: Projected service population at 2 and 4% growth rates.

2.2.2 Existing Victor Sewer Line Connection

The capacity and necessity of upgrading the 8" pressure and 12" gravity lines that direct flow from Victor to the WRF is currently being investigated. If upgrades to this line are deemed necessary now or in the near future, they will be conducted as a separate project.

CHAPTER 3 - DEVELOPMENT OF DESIGN CRITERIA

3.1 Projected Design Criteria

Design criteria for the Teton Valley Regional WRF upgrade considers the existing conditions measured at the plant along with anticipated growth in the area. In general, we assume that influent BOD, TSS, and nitrogen concentrations will remain comparable to historical values. Thus, future loads on the WRF are based on changes in the influent flow, once we have established reasonable estimates for average influent constituent concentrations.

3.1.1 Influent Flow

Based on the population currently connected to the WRF, an average flow of 110 gpd per person was established. The population growth models outlined in section 2.2 estimate that average influent flow will be between 600,000 and 900,000 gpd by the year 2030, with an additional 200,000 gpd for maximum flow summer months. Peak hourly and peak day flows are more difficult to establish as the only influent flow data available is based on overall monthly averages of daily flow and monthly compilation data from lift station flow meters. However, a peaking factor of 2.0 times the average daily flow is considered appropriate for this facility considering the relatively large service area. Therefore, by 2030 the WRF could experience peak hour flows up to 1.8 MGD during average months and 2.0 MGD during maximum flow months. Hence, the WRF should be upgraded to handle peak hourly hydraulic loads up to 2.0 MGD.

The service area does have the potential to add thousands of connections if all of the land currently set aside for residencies is developed (Nelson Engineering, 2006). However, based on more recent growth estimates, it could be several decades before much of this land is actually developed and connected to the WRF. Therefore, rather than investing now in a higher-capacity system with high initial capital costs, it would be more prudent and conservative to expand the plant as the growth occurs. In this manner, the City and current residents will not be overly invested in the WRF, relying on exceptional growth to fund the initial expansions and upgrades. If growth occurs faster than anticipated, the expansion and upgrade schedule can accelerate to match, and funds from the new connections will be available to finance the costs. It is recommended that the plant be updated with a technology that ensures consistent effluent quality, can handle shock hydraulic loads and highly variable influent flow rates, and is easily expandable.

3.1.2 Influent BOD

Influent BOD measurements from the WRF averaged 330 mg/L, higher than would be expected from a primarily residential population base. The most recent data from 2008 and 2009 show much lower BOD concentrations of around 230 mg/L. BOD concentrations are highly variable throughout the data set, and no clear seasonal pattern or other explanation for the higher BOD concentration is apparent. Recently, it was discovered that a local brewery is connected to the sewer system. This may account for part of the higher BOD loads, but a full explanation for the BOD loading and variability has yet to be determined. The proposed technology for the upgraded WRF is designed primarily on the biologic load. Thus, as long as the plant has BOD and ammonia treatment capacity, influent flows could be considerably higher than the design flow rates without adversely affecting treatment. Consequently, a conservative value for BOD is used to ensure that the upgraded plant can handle peak loads and is well prepared for extremely high hydraulic loads that have been noted at the WRF. Accordingly, a design value of 330 mg/L for BOD is recommended. Using the average daily design flow established in section 3.1.1 of 0.9 MGD, the design average BOD load is 2,477 pounds per day.

3.1.3 Influent TSS

TSS measurements reported from the WRF are also higher than expected, with median values around 270 mg/L. Values from 2008 were lower, averaging 180 mg/L. Typically, as long as TSS values are not too extreme, TSS is not as critical as other parameters when designing wastewater treatment processes. Thus, it is recommended that the design influent TSS be 200 mg/L, a conservative value based on the pilot plant data. Using the average daily design flow established in section 3.1.1 of 0.9 mgd, the design average TSS load is 1,500 pounds per day.

3.1.4 Influent Ammonia and TKN

Influent nitrogen data is not routinely measured at the WRF, and the only data available with a frequent measurement interval are from the pilot plant. Influent ammonia at the pilot plant averaged 31.1 mg/L, with some data points near or slightly above 40 mg/L. Typical values for a residential area usually reside around 30 mg/L, so these results are reasonable. It is recommended that the design influent TKN be 35 mg/L.

3.1.5 Effluent Requirements

Effluent requirements for TSS and BOD are not anticipated to change from the current requirements of 30 mg/L. Recently, the EPA has stated that the new discharge permit will impose an effluent ammonia limit of <1.0 mg/l. This limit is significantly lower than typical ammonia limits, and the current treatment process will not meet this requirement. Nevertheless, the technology proposed for this upgrade will meet and exceed this requirement as evidenced by the pilot plant data. An effluent phosphorous limit may eventually be implemented, though no details of this requirement are available at this time.

3.1.6 Summary of Design Criteria

A summary of the design criteria established in this study is shown in Table 3-1. The table summarizes the recommended 20-year design criteria. At this time, no limits for nitrogen or phosphorous are required though limits may be established in the future.

Table 3-1: Proposed design criteria.

Parameter	Proposed 2030 Design
Connected Population (4% Growth)	8,204
Average Daily Flow	0.90 MGD
Peak Hour Flow (Average Months)	1.80 MGD
Maximum Monthly Flows	1.10 MGD
Peak Hour Flows (Maximum Months)	2.00 MGD
Maximum Daily Influent BOD Concentration	330 mg/L
Maximum BOD Load	2,477 lbs/day
Average Influent BOD Concentration	230 mg/L
Average BOD Load	1,726 lbs/day
Influent TSS Concentration	200 mg/L
Influent TSS Load (#/day)	1,500 lbs/day
Influent TKN Concentration	35 mg/L
Effluent TSS Limit / Capability	30/10 mg/L
Effluent BOD Limit / Capability	30/10 mg/L
Effluent Ammonia Limit / Capability	< 1.0 / (< 0.1) mg/L
Effluent Phosphorous Limit mg/l	N/A

CHAPTER 4 - PROPOSED UPGRADE TECHNOLOGY & PILOT PLANT STUDY

4.1 Introduction to MSABP Technology

The Aquarius Multi-Stage Activated Biological Process (MSABP) treatment technology is based on the concept of spatial microorganism successions and trophic hydrobiont chains. In other words, the technology is based on a series of water borne bacteria and their successive food chain levels. The MSABP includes segregated areas within a process tank in which microorganism colonies are developed on special platforms and the various microorganisms can exist in specific feeding stages or trophic levels. As wastewater flows through the reactor, primary organisms consume microbes, and higher organized organisms feed on the primary organisms, etc…, much like a microscopic food chain.

After passing through fine screens (typically 1mm) and grit removal in the headworks, flow enters directly into the MSABP (Figure 4-1). The MSABP bioreactor contains various microorganisms that are separated into several aerobic and anoxic tanks. Each tank provides the ideal environment for the organisms that it contains and is provided with an individually controlled air supply intended for maintaining vital activity of the microorganism and optimum oxygen transfer. The tanks are also equipped with a proprietary inner carrier fabricated from synthetic material that provides immobilization of microorganisms within each stage. The number of stages and their arrangement depends on site specific parameters, but typically ranges from 8 to 16.

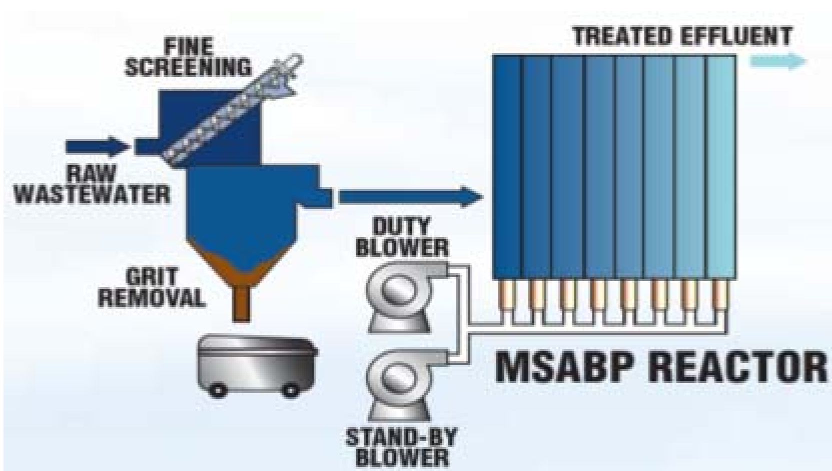

Figure 4-1: Basic flow schematic of MSABP technology.

This trophic chain design leads to a total consumption of waste sludge or solids by primary microorganisms, with no need for sludge handling. Thus, the Aquarius MSABP system virtually eliminates waste sludge and reduces the capital and O&M costs associated with handling, dewatering, and removing waste solids from the waste stream. Advantages of this technology include:

- Energy efficient;
- No primary or secondary settling required;
- Relatively compact footprint;
- High quality effluent;
- No return sludge or recycle pumping necessary;
- Hydraulic and organic shock load stability;
- Eliminates the equipment, operation, and disposal costs associated with sludge dewatering and handling.

The system is relatively simple to operate once the various bacteria colonies are established. This technology is unique in that it produces high quality effluent without production of waste sludge. Typical removal efficiencies are shown in Table 4-1. The only disadvantage of the system relative to other technologies is that it requires very fine screening (typically 1 mm) in the headworks.

Table 4-1: Typical removal efficiencies of MSABP technology.

BOD_5	97-99.5%
Suspended Solids	95-97%
Ammonia Nitrogen	90-99%
Total Phosphorus	90-99%
Oil & Grease	95-99.9%

Wastewater effluent from the bioreactor requires no additional filters or clarification, and can be sent directly to the disinfection process. Treated effluent can then be discharged into the receiving body or used as utility/reuse water.

4.2 Aquarius MSABP Pilot Project in Driggs Idaho

A pilot facility utilizing MSABP technology was installed in June of 2008. This system consisted of a 12 stage bioreactor and was designed to treat a small portion of screened influent from the main WRF. Sample influent and effluent data were taken from the pilot plant to determine the efficiency and effectiveness of the technology for treating wastewater from the Driggs, Idaho area. The retention time was varied throughout the pilot project to help determine optimal sizes and storage times for a full-size plant. Selected photographs of the pilot plant are shown in Figure 4-2.

Figure 4-2: Images from MSABP pilot plant. Top Left – blowers and main holding tank of pilot equipment. Top Right & Bottom Left – Inside individual MSABP basins or stages, showing wastewater and fabricated inner carrier for bacteria. Bottom Right – Effluent form pilot plant flowing into WWTP lagoon.

4.2.1 Pilot Project Data

Several parameters were monitored from June 10 through November 6, 2008 at the pilot project, including influent and effluent BOD, TSS, ammonia, turbidity, and temperature. These parameters were measured to determine the real world efficiency of the MSABP technology. The retention time in the pilot tanks was varied from 24 hours at the beginning, to 8 hours during the middle, and finally reduced to 6 hours near the end of pilot to help correlate retention time and treatment efficiency, and to help in sizing a full-scale system. A complete set of data measured at the pilot plant is provided in the appendix.

4.2.2 Pilot Plant BOD

Influent and effluent BOD data show that the MSABP pilot plant averaged 92% BOD_5 removal over the entire data set. Influent BOD concentrations averaged 230 mg/L and effluent concentrations averaged 18 mg/L (Figure 4-3). Note that effluent BOD increases during the second half of the pilot program. This is related to the retention time and shows that longer retention times produce better effluent. With retention time is at 24 hours, BOD removal efficiency averages 96.2%, and effluent BOD averages 14 mg/L. Figure 4-4 shows the relationship between retention time and BOD removal efficiency. The retention time was decreased mainly to tests the ultimate fail limits of the technology, which proved to be two to three times the rated hydraulic and organic design capacity.

Even with a retention time of 8 hours, BOD removal efficiency is fairly high (94.8%), but drops to 89% at 6 hours retention time. Thus, concerning BOD, it appears that a minimum of 8 hours is needed to keep BOD removal around 95% using MSABP technology. Obviously, the longer the retention time, the higher the BOD removal percentage, but this minimum retention time should be considered in designing the full-scale MSABP plant.

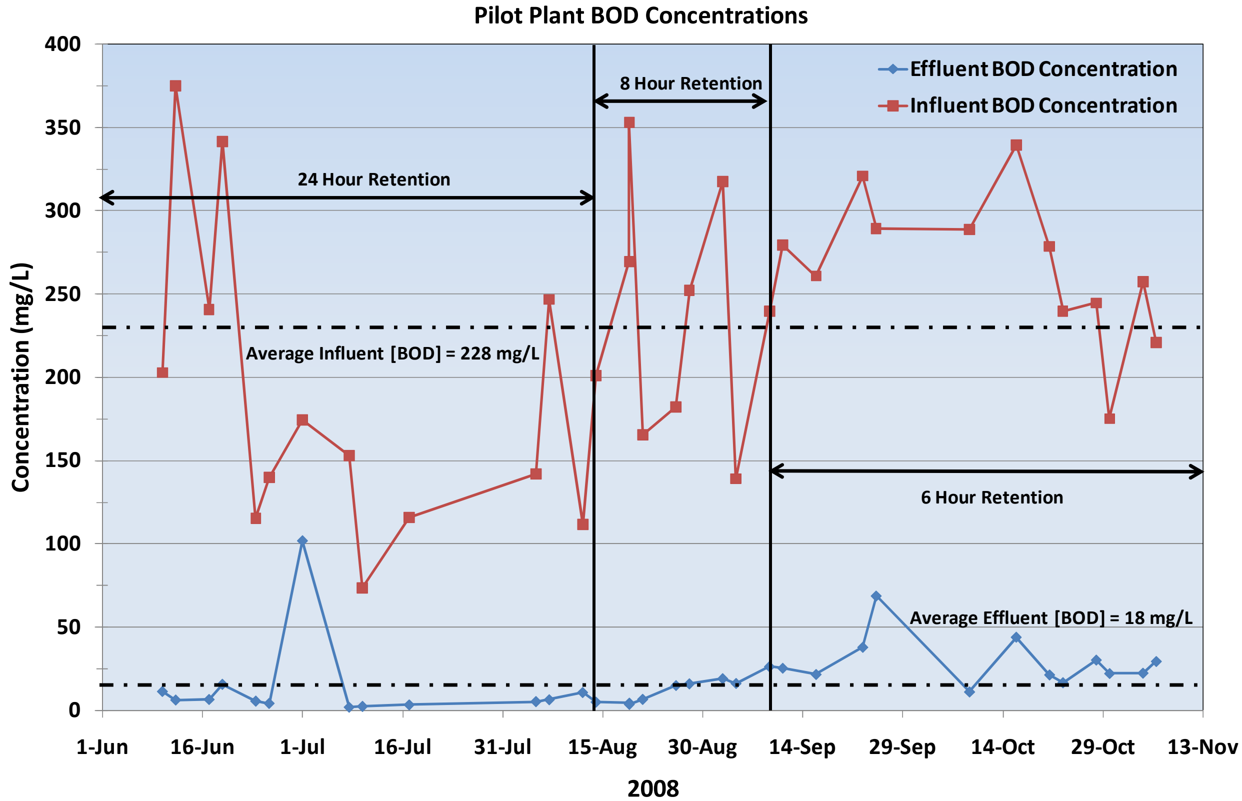

Figure 4-3: Pilot plant influent and effluent BOD measurements.

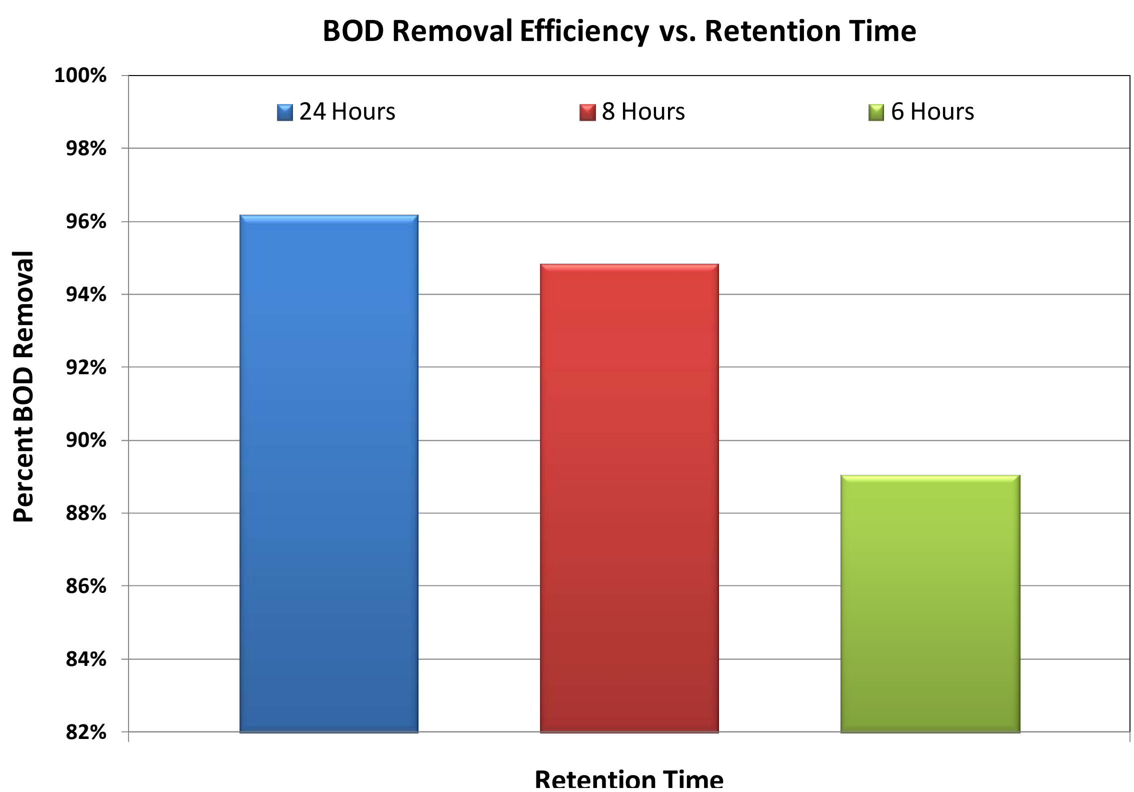

Figure 4-4: Retention time versus BOD removal efficiency (%) at the pilot plant.

4.2.3 Pilot Plant TSS

Influent and effluent TSS data show that the MSABP pilot plant averaged 77% TSS removal over the entire data set. Retention time had a much higher impact on TSS removal than BOD removal. Influent TSS concentrations averaged 180 mg/L (135 mg/L less than values reported from the main WWTP) and effluent concentrations averaged 37 mg/L (Figure 4-5). When the retention time is at 24 hours, TSS removal efficiency averages 95.7%, and effluent TSS averages less than 10 mg/L. Dropping to 8 hours retention time decreases the TSS removal efficiency to 85.7%, and at 6 hours, the efficiency dropped to 59.9% (Figure 4-6).

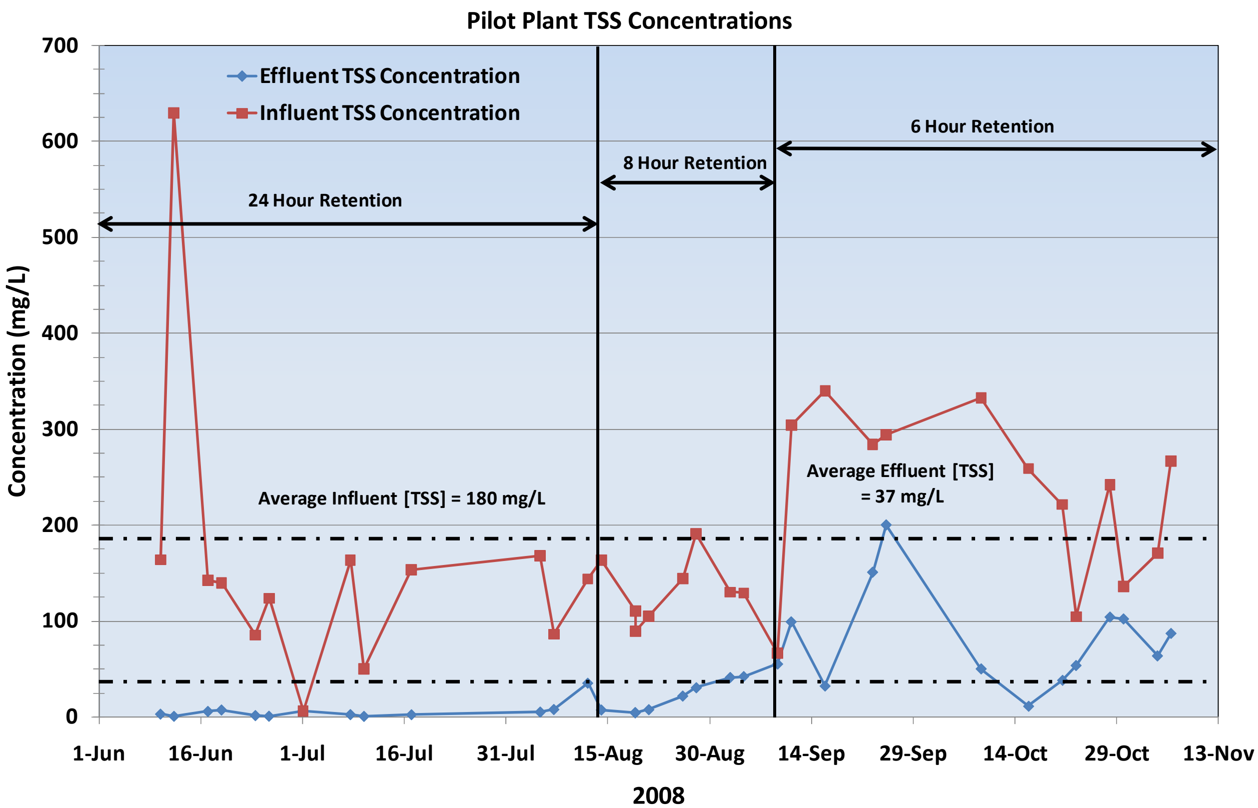

Figure 4-5: Pilot plant influent and effluent TSS measurements.

TSS removal appeared to be more sensitive to the retention time. At 24 hours, the removal efficiency is comparable to that of BOD. However, even at 8 hours, the TSS removal decreases dramatically. Thus, the data suggest that TSS may dictate the size of the full-scale plant, or additional grit removal is needed upstream of the MSABP tanks. This justifies installing a grit trap or fine screening (1mm) as part of the headworks process.

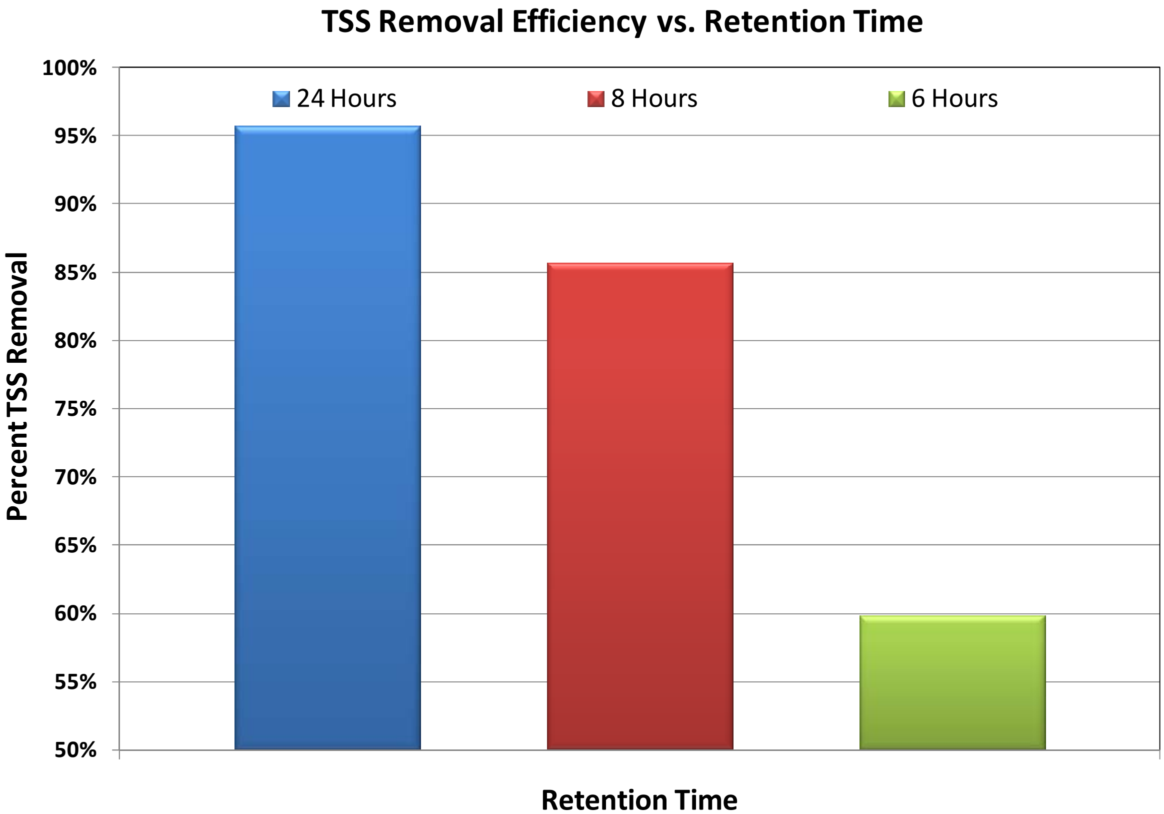

Figure 4-6: Retention time versus TSS removal efficiency (%) at the pilot plant.

4.2.4 Pilot Plant Nitrogen (Ammonia and Nitrate)

The effects of the MSABP plant on nitrogen levels were also monitored during the pilot project. Influent and effluent ammonia (NH_3) and nitrate (NO_3) were measured. However, since influent nitrate and effluent ammonia were negligible (measurements reported at less than 1.0 mg/L, due to the nature of the MSABP process and wastewater treatment in general), only *influent* ammonia and *effluent* nitrate are discussed here. Influent ammonia averaged 31.1 mg/mL, and ranged from 12 mg/L to 43 mg/L (Figure 4-7). Effluent nitrate averaged 12 mg/L, and also appeared to vary with the retention time. Again, longer retention time yielded lower effluent nitrate values.

Removal efficiency of nitrogen requires a direct comparison of the amount of influent and effluent nitrogen. Since ammonia and nitrate have different molecular weights (17 mg/millimole and 62 mg/millimole respectively), the concentrations of ammonia and nitrate cannot be directly

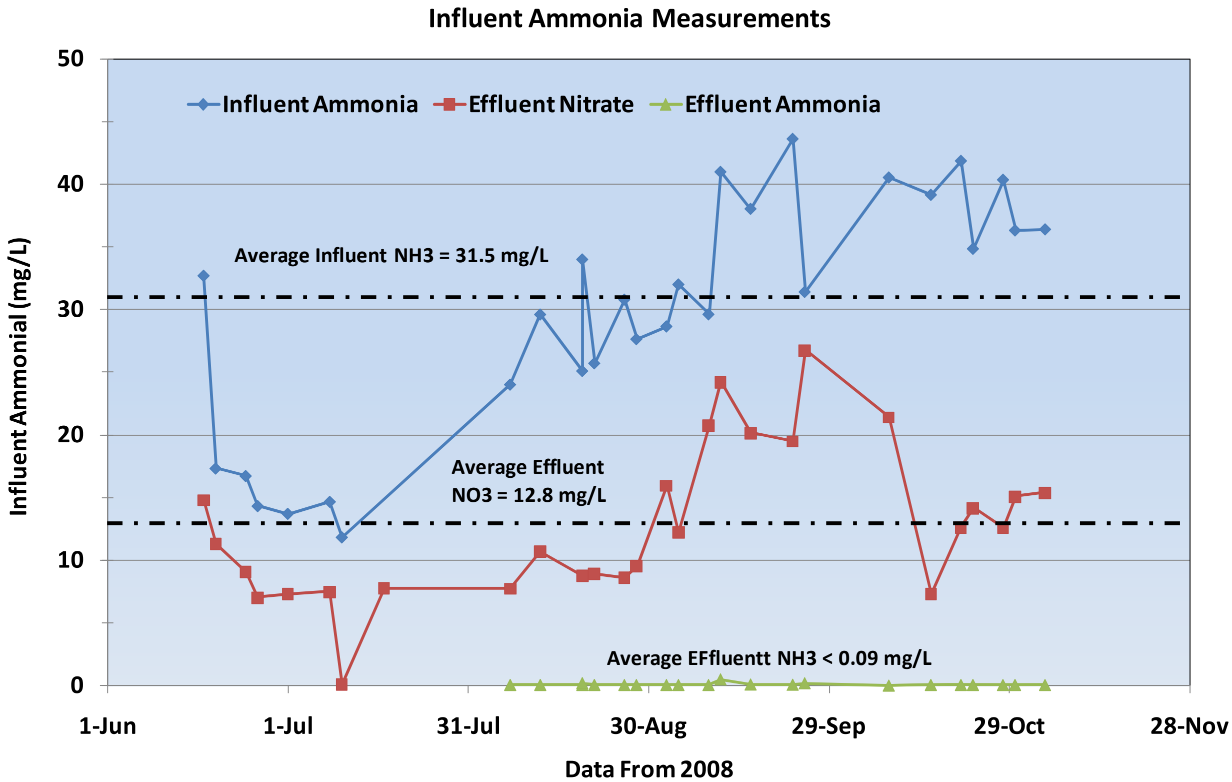

Figure 4-7: Influent ammonia and effluent nitrate measured at the pilot plant.

compared to determine nitrogen removal efficiency. Using the molecular weights, the number of moles of influent and effluent nitrogen is determined to allow for a direct comparison as follows:

$$\frac{Moles\ of\ Nitrogen}{Liter} = \frac{Concentration\ (Ammonia\ or\ Nitrate)}{Molecular\ Weight\ (Ammonia\ or\ Nitrate)}$$

$$\therefore Influent\ \mathrm{N} = \frac{[Ammonia]}{MW_{Ammonia}} = \frac{31.1\ {}^{mg}/_{Liter}}{17\ {}^{mg}/_{millimole}} = 1.829\ \frac{millimoles\ \mathrm{N}}{Liter}\ or\ 25.61\ \frac{mg\ N}{L}$$

and

$$Effluent\ \mathrm{N} = \frac{[Nitrate]}{MW_{Nitrate}} = \frac{12\ {}^{mg}/_{Liter}}{62\ {}^{mg}/_{millimole}} = 0.194\ \frac{millimoles\ \mathrm{N}}{Liter}\ or\ 2.72\ \frac{mg\ N}{L}$$

Using these values, the overall average removal efficiency of influent nitrogen is 89.4% at the pilot plant. The removal efficiency is even higher (93+%) with a 24 hours retention time. MSABP technology is superior for ammonia removal, and quickly reduces ammonia concentrations in the waste stream. Even for the pilot study, which had retention times as low as 6 hours, effluent ammonia levels were between 0.05 and 0.1 mg/L. This technology will easily meet the EPA's new effluent ammonia limit of <1.0 mg/L.

4.2.5 Other Pilot Plant Data

Other parameters monitored at the pilot plant include influent and effluent pH and temperature; ambient temperature of the headworks facility; and dissolved oxygen (DO) levels of pilot plant water samples versus removal time and temperature. All of these parameters showed reasonable levels and were close to comparable measurements taken from the main WRF flow stream. The data collected from the pilot plant is provided in the appendix.

CHAPTER 5 - PRELIMINARY DESIGN AND LAYOUT

5.1 Preliminary Design

Preliminary design for this upgrade can be divided into three major portions:

1. Headworks expansion and fine screening.
2. MSABP tanks and equipment.
3. Filtration and UV disinfection.

Each of these components will require new equipment and facilities at the WRF. Additional fine screening and, depending on the screening technology selected, grit removal will be added to the headworks in a new building. The MSABP technology will require new concrete basins, with influent splitter and effluent collection boxes. Finally, another new building will house the UV disinfection channels and equipment, along with the blowers and electrical panels for the MSABP basins. Cloth filters to filter MSABP effluent, decrease the energy costs of UV disinfection, and aid in future phosphorous removal may be installed in the UV/Blower building as well. All new buildings and structures will be located on the existing site. The two smaller lagoons located on the edge of the site will be backfilled to create the space needed for all structures proposed for this upgrade. Thus, impacts on surrounding land use and environments are minimized by keeping all new structures within the existing site.

Flow will pass from the existing influent channels and ¼” screens in the headworks building into a new diversion box. Typically, flow from the diversion box will enter the wet well in the new headworks building. If flow ever exceeds the capacity of the new wet well and pumps, the water level in the diversion box will rise and eventually flow into the existing lagoons. The lagoons will remain as emergency overflow in the case of extreme peak flows or power outages. New pumps will pump wastewater from the new wet well to the grit trap and/or fine screens in the new headworks building. Screenings and dewatered grit will discharge into a waste cart, ready for removal and disposal from the site.

Effluent from the fine screens will then enter the MSABP splitter box and flow into one of two new MSABP basins. After passing through these basins, effluent will flow into a new collection box. From this point, the flow will either pass through cloth filters and on to UV disinfection or directly into the UV disinfection channels, depending on the selected layout. From this point, the water will flow to the plants discharge point. A sample site layout of these new facilities is shown in Figure 5-1A and 5-1B. The following subsections discuss each of these aspects in more detail. Figure 5-1 also shows the location of a possible future plate clarifier building. The plate clarifier, combined with chemical mixing and the cloth filters, would provide for phosphorous removal if required or desired in the future. Effluent from the MSABP tanks would flow into the plate clarifier, and then into the cloth filters and on to UV disinfection. Another possibility is to install solar panels (see Figure 5-1) at the site, providing energy to power or at least supplement the UV disinfection system. The solar panel option has received separate grant funding in the amount of $220,000 and will be implemented along with the other upgrades at this site.

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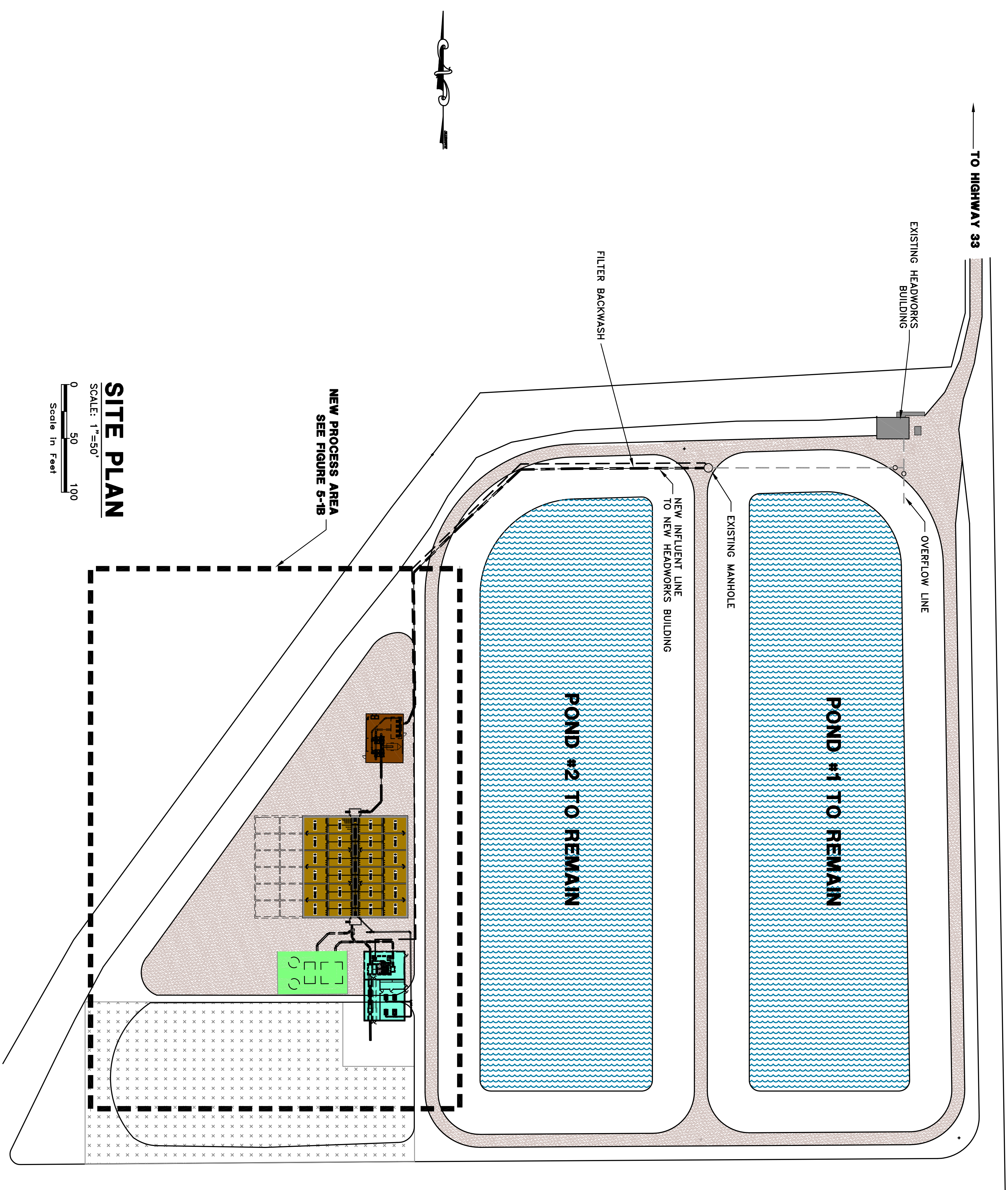

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FIGURE 5-1A

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PHONE (801) 299-1327 FAX (801) 299-0153

TETON VALLEY REGIONAL WRF

WATER RECLAMATION FACILITY UPGRADE
CIVIL
PRELIMINARY SITE PLAN

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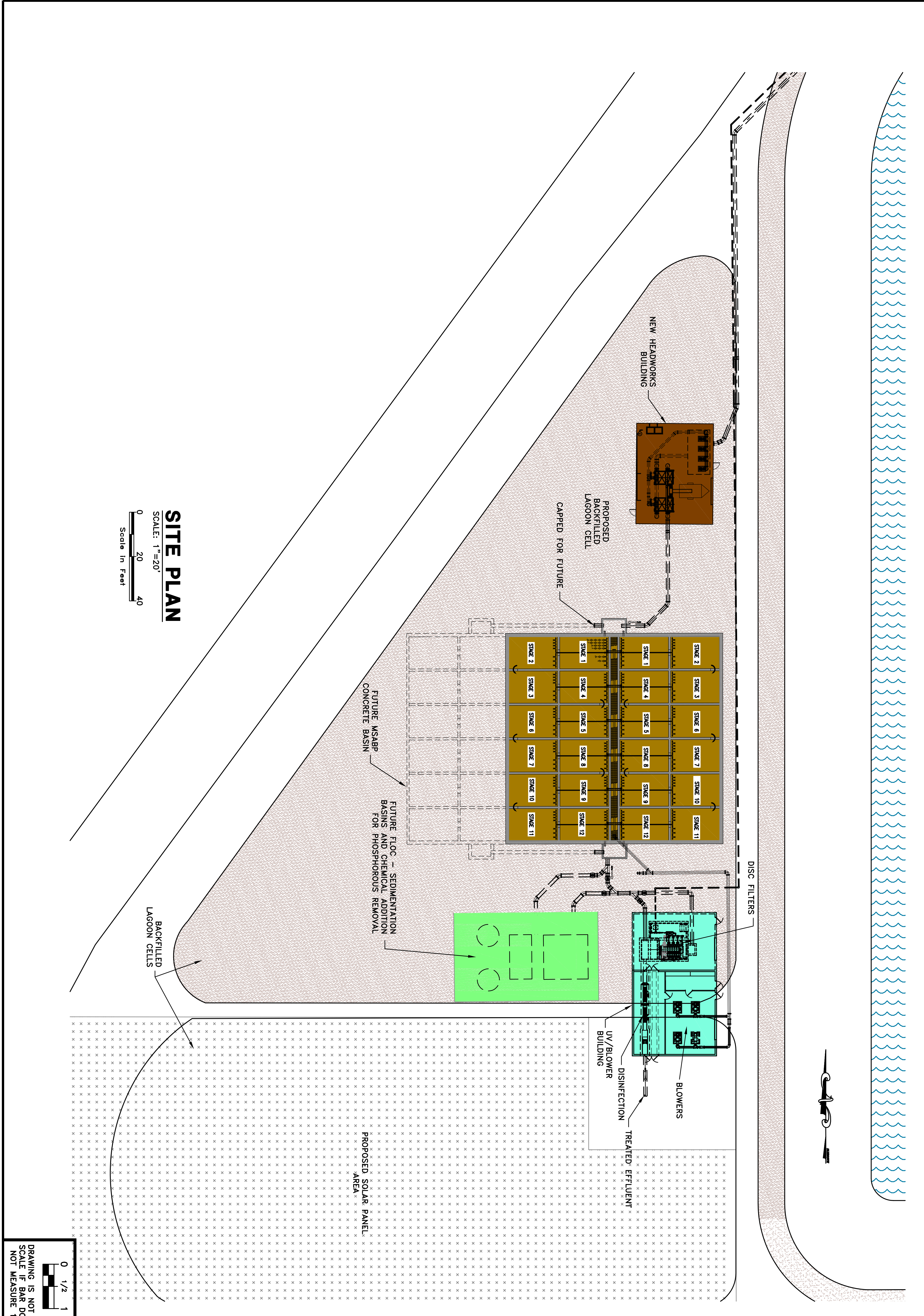

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FIGURE
5-1B

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TETON VALLEY REGIONAL WRF

WATER RECLAMATION FACILITY UPGRADE
CIVIL
NEW PROCESS AREA

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5.1.1 Existing Headworks Building

As previously mentioned, the MSABP process requires grit removal and/or fine screening to operate effectively. The headworks must provide screening and grit removal to remove large debris, rags, solids, grit and sand from the waste stream to protect the equipment in the MSABP basins and maximize their treatment capacity. A new Huber SSF-HF ¼" screen with a model WAP 2 washpactor is already scheduled to be installed in the eastern headworks influent channel in 2009 (Figure 5-2). This screen, along with the existing ¼" screen will remove large debris and rags from the waste stream. The screen is designed to handle up to 2.0 MGD (peak hourly flow) in the existing channel and can operate on a duty/standby basis with the existing screen in the western channel.

Figure 5-2: Huber step screen with washpactor.

The existing headworks building, after installation of the new Huber ¼" screen, will not require any major upgrades. Effluent from the ¼" screens and the influent channels will exit the building through the existing pipe and flow into the new diversion box.

5.1.2 Diversion Box

The existing pipeline that connects the headworks and the aeration lagoon will be intercepted. A new diversion box will be constructed that collects flow from the headworks building and directs it towards the wet well in the new headworks building (Figure 5-1). The diversion box is designed so that if flows ever exceed the capacity of the wet well pumps, the excess flow will be diverted into the lagoons and the wet well will not flood. Thus, the existing lagoons will act as emergency bypass ponds and equalization basins. This configuration will allow the plant to handle anomalously high influent flows and power outages.

5.1.3 New Headworks Building

Water from the diversion box will enter the new wet well. The wastewater will be pumped from the wet well to the grit trap and/or screens on the main floor of the new building. A flow meter will be installed on the pump discharge line to measure influent flow, eliminating the problem of submerging the weir in the existing influent channel.

The MSABP process requires 1 mm (0.04”) fine screens and, depending on the specific fine screen selected, grit removal to protect the MSABP equipment, maximize treatment efficiency, and eliminate sludge production in the process. Two options were investigated for this report:

1) Installing a grit trap tank with a grit classifier, followed by Huber or Eimco fine screens in the new headworks building (Figure 5-3) or
2) Installing Salsnes filters in the new building, which do not require grit removal (Figure 5-4).

The Salnes filters are more expensive than some of the 1mm screens, but do not require extra grit removal equipment. A cost analysis of these two options is provided in Chapter 6.

In either case, the wet well pumps will direct flow through the grit and/or fine screening processes. Two screens will be installed to provide complete redundancy. Each screen is sized to handle up to 2.0 MGD, the ultimate peak hour flow that the existing headworks channel can handle. A shaftless screw conveyor will transport screenings from the screens and discharge them directly into the waste cart. If a grit classifier is installed, it will share the waste cart with the screens. Effluent from the screens will exit the new building and flow into the MSABP splitter box. Preliminary elevations of the headworks building are shown in Figure 5-5.

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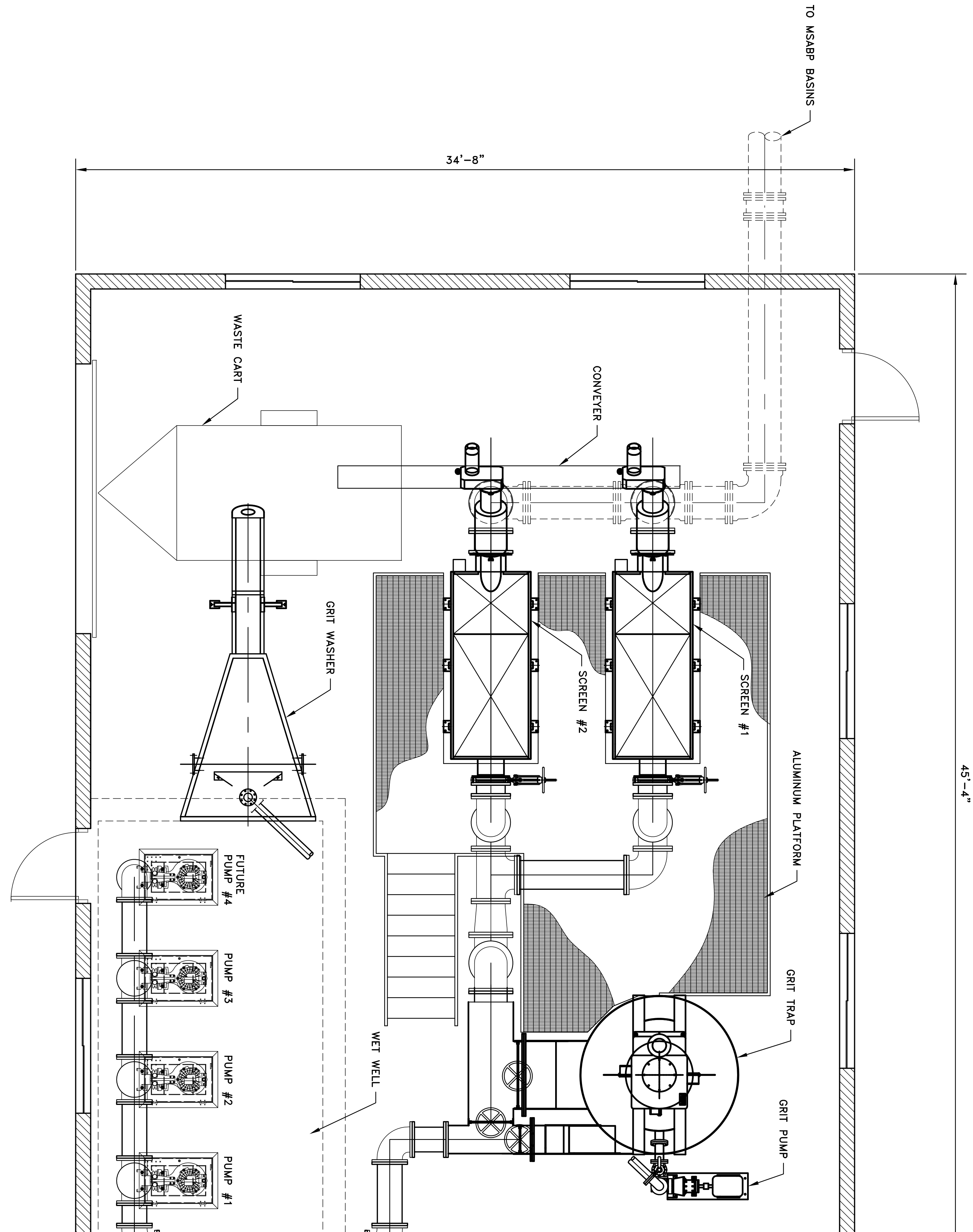

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Scale in Feet

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FIGURE
5-3

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WASTEWATER TREATMENT FACILITY UPGRADE
HEADWORKS BUILDING
ARCHITECTURAL OPTION "B" PLAN

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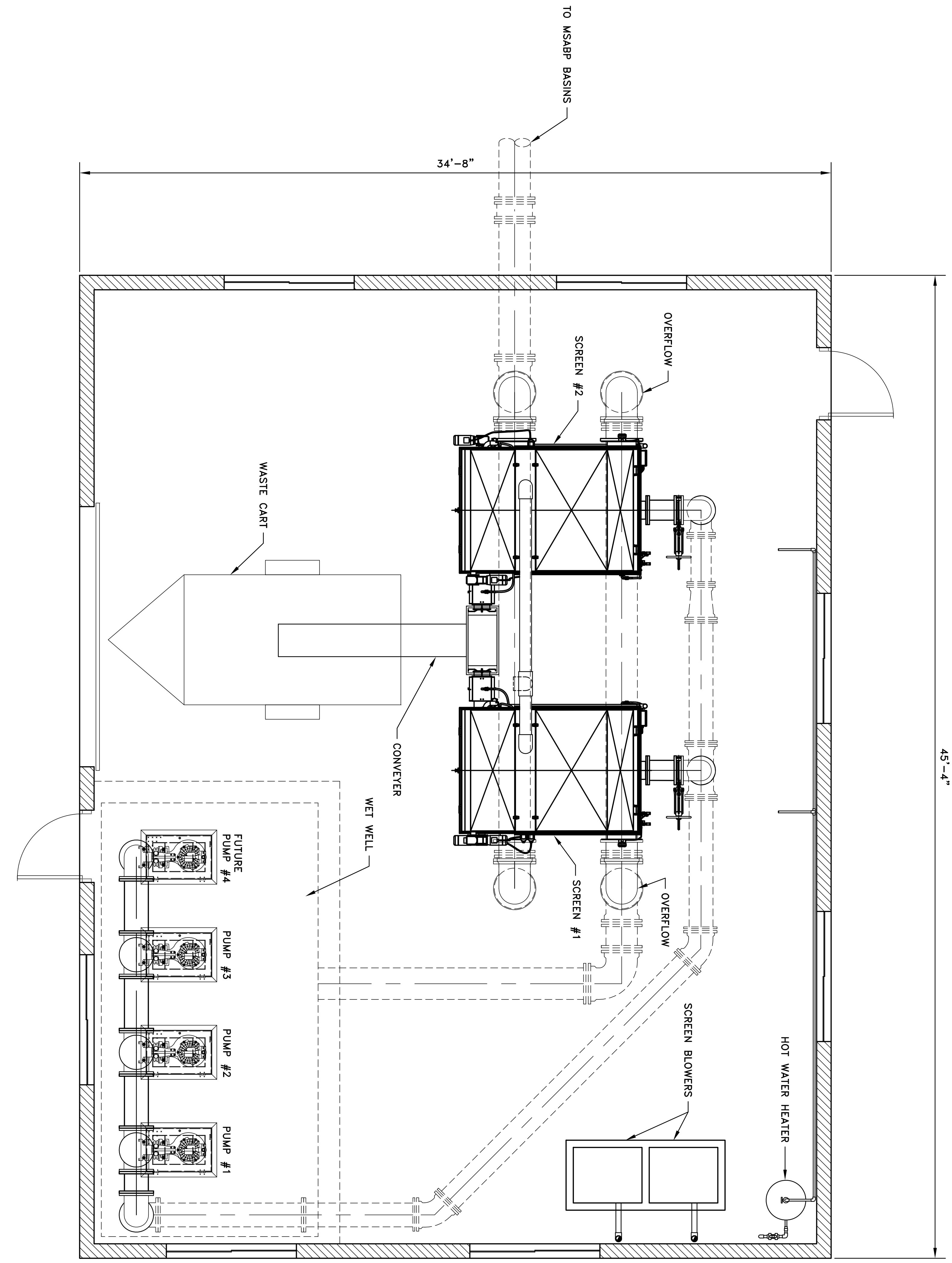

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FIGURE 5-4

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WASTEWATER TREATMENT FACILITY UPGRADE
HEADWORKS BUILDING
ARCHITECTURAL OPTION "A" PLAN

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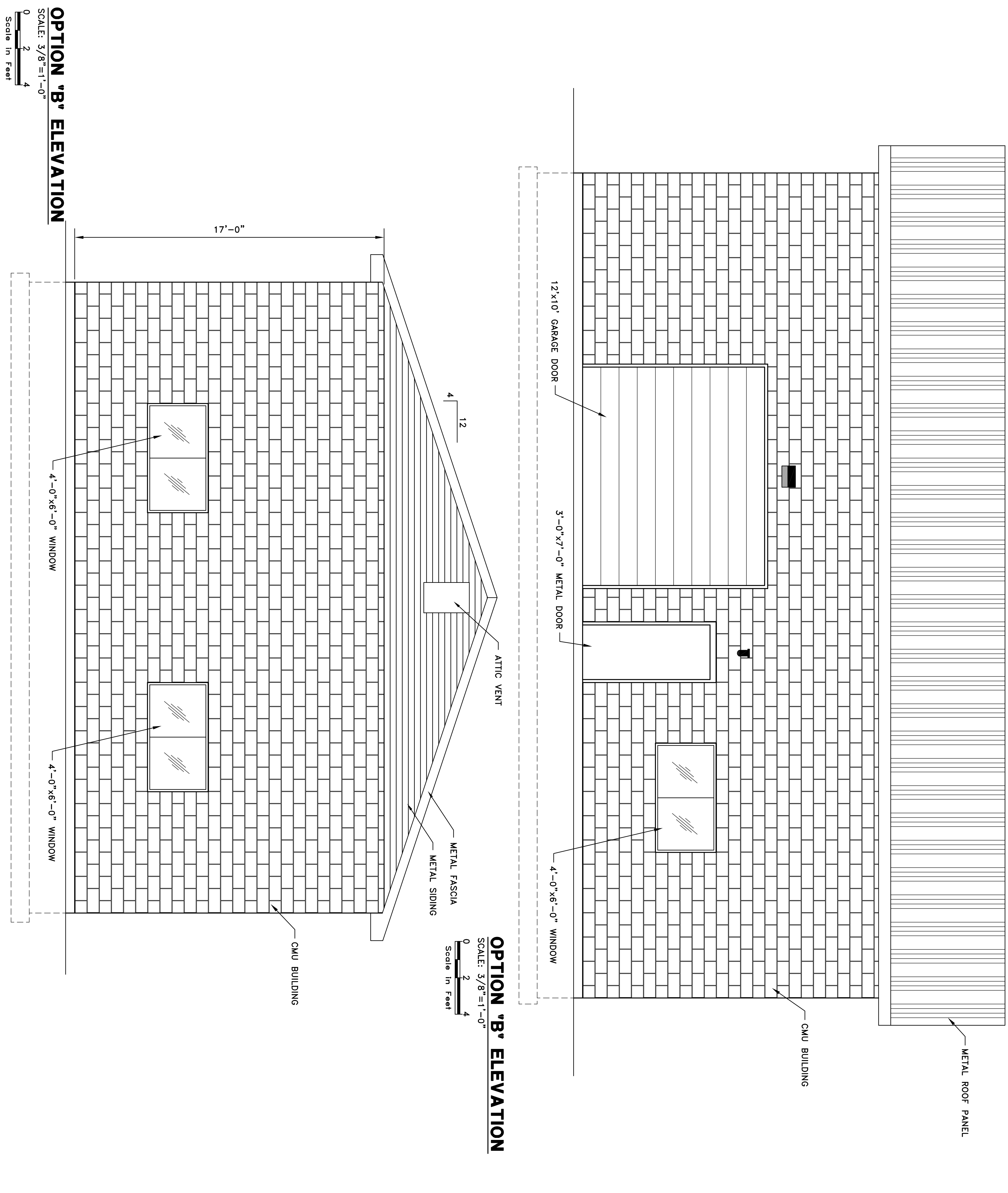

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FIGURE 5-5

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DRIGGS, IDAHO

WASTEWATER TREATMENT FACILITY UPGRADE
HEADWORKS BUILDING
ARCHITECTURAL OPTION "B" PLAN

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5.1.4 MSABP Basins

Following the headworks, the wastewater stream enters the MSABP splitter box and flows into the individual treatment basins. The splitter box will initially split flow into two basins, with a gate installed to allow for a future third basin. For this application, two (2) basins with 12 separate stages or tanks are recommended (Figure 5-6). The pilot project showed that a 24-hour retention time produced optimal effluent quality, though lower retention times are acceptable especially if biologic loads are within design parameters. This is ideal for maximum monthly flows that significantly increase hydraulic loads, but do not impact BOD and other loading. Thus, for 0.9 MGD, the basins should have a total volume of roughly 900,000 gallons, or 450,000 gallons each. The manufacturer recommends an operating water depth of at least 15 feet. Therefore, to provide adequate space for the 12 stages and the required volume, each basin will be 92’ long by 45’ wide and 18.5’ tall to provide 18 inches of freeboard at 17’ operating water depth (Figure 5-7).

Each tank in the process will house different micro organisms and operating conditions (aerobic, anoxic, anaerobic etc…). Air for each stage will be provided by blowers installed in the new UV disinfection building. Effluent from the MSABP will be clear and already meet effluent requirements for BOD, TSS and total nitrogen. Due to the nature of the MSABP process, no sludge dewatering or recycle is necessary. Effluent from the MSABP basins will enter the collection box and discharge into the UV building for tertiary treatment.

The MSABP process requires one dedicated blower per basin. Three blowers will be installed initially, providing 1 standby blower, with room for a future fourth blower. The blowers provide air to each of the stages to maintain the specific conditions required. The blowers, each capable of supplying 600 scfm, will be located in a new building that will also house the UV disinfection equipment. An electrical room is also provided in this building that accommodates electrical panels for the UV and MSABP processes.

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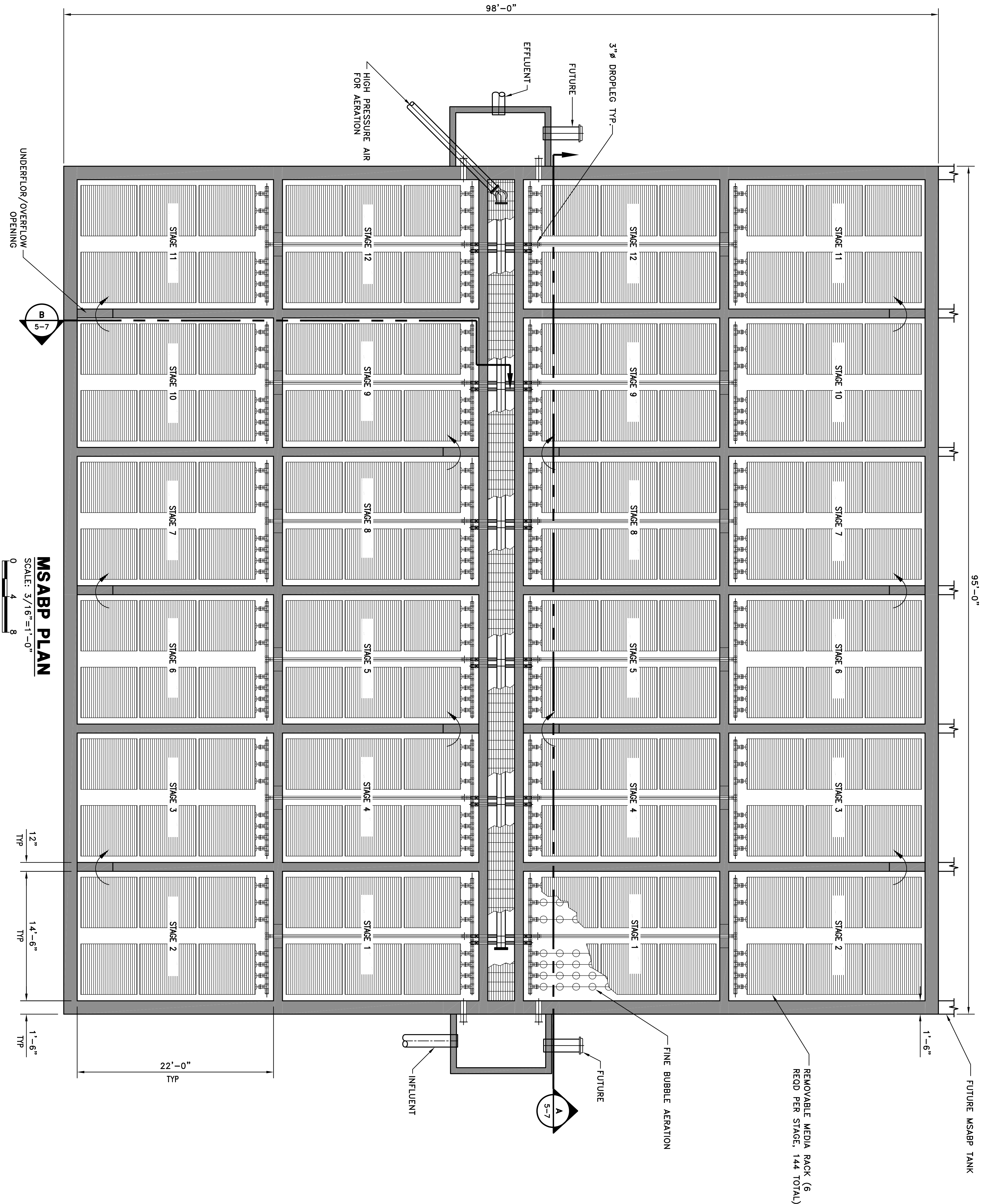

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FIGURE 5-6

AQUA ENGINEERING, INC.
533 W. 2600 S., SUITE 275 BOUNTIFUL, UT 84010
PHONE (801) 299-1327 FAX (801) 299-0153

DRIGGS CITY, IDAHO

WASTEWATER TREATMENT PLANT UPGRADE
MSABP PROCESS TANK
MECHANICAL PLAN

ORIGINAL				
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REVISIONS				

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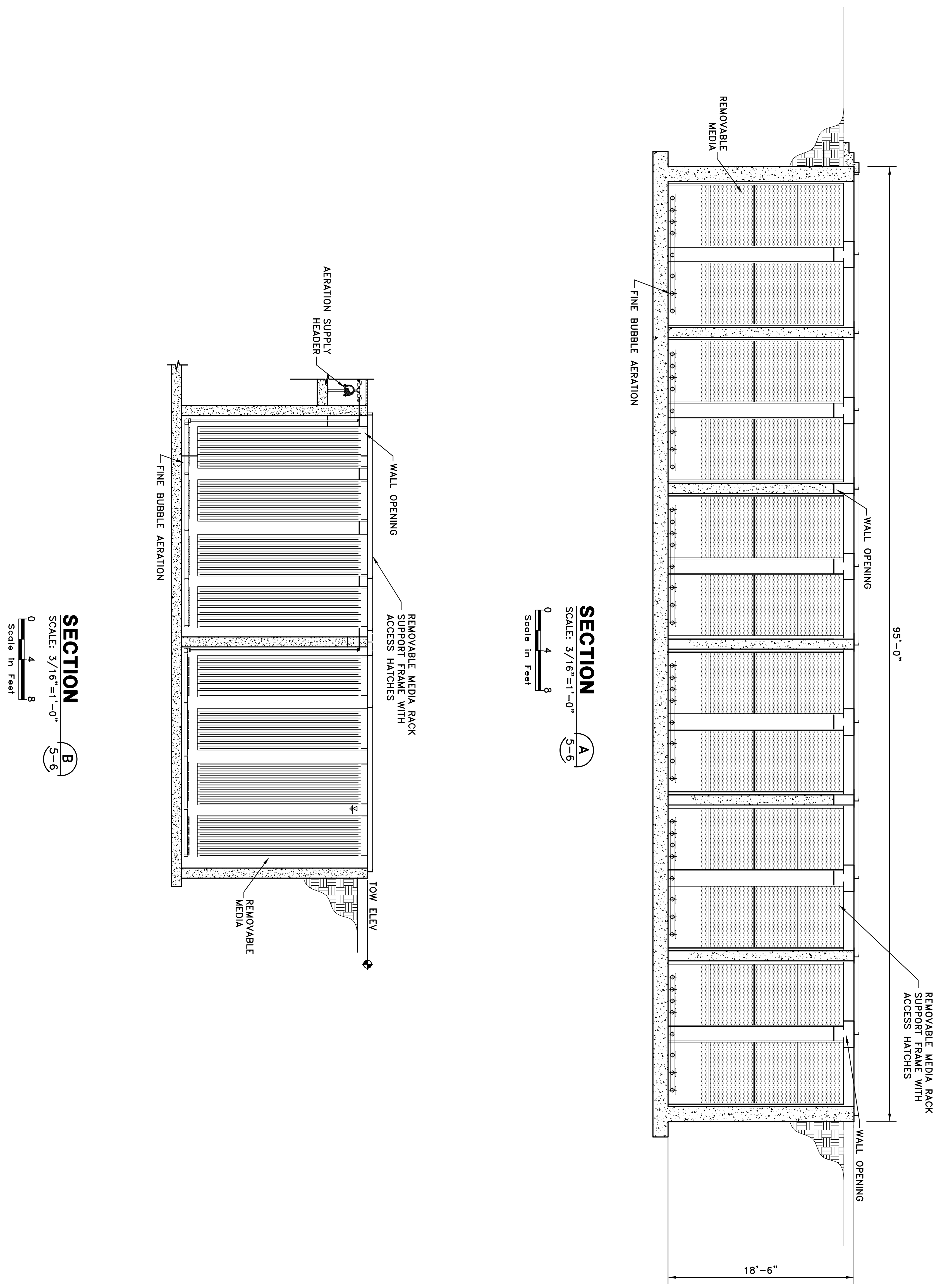

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DRAWING IS NOT TO SCALE IF BAR DOES NOT MEASURE 1"

FIGURE 5-7

AQUA ENGINEERING, INC.
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DRIGGS CITY, IDAHO

WASTEWATER TREATMENT PLANT UPGRADE
MSABP PROCESS TANK
MECHANICAL SECTIONS

ORIGINAL				
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REVISIONS				

5.1.5 Disk Filters and UV Disinfection

Following the MSABP basins, two options for tertiary treatment and disinfection were investigated. The first option would install cloth filters after the MSABP process and before the UV disinfection channels (Figure 5-8). The advantage here is that the cloth filters would safeguard against any solids that might discharge from the MSABP basins, and could aid in future phosphorous removal. Furthermore the filters, with an assumed effluent turbidity of 2.5 NTUs, would reduce the size and energy consumption of the UV disinfection equipment. The UV disinfection layout would be similar to that discussed in the next paragraph, except that the UV modules may contain fewer lamps and consume less energy.

The second option would direct effluent flow from the MSABP basins directly into the UV disinfection channel (Figure 5-9). The channel will contain two UV banks, and is sized to treat peak hour flows up to 2.00 MGD. This configuration assumes that MSABP effluent has a turbidity of 5.0 NTUs, and a transmissivity of 55%. Space is available in the UV building to install either a second UV channel in the future or install additional UV banks in the single channel.

UV disinfection is the final step before effluent is discharged back to the environment. Effluent from the UV channels will flow over a finger weir or level control gate. This special weir or gate is necessary to maintain a constant water level in the UV channel. At this point, the water is ready to be discharged from the plant.

As indicated in the layouts, a new building will be constructed to house the UV disinfection channels and equipment, the blowers for the MSABP process, and the cloth filters if they are selected. The layout of this building will depend on whether or not cloth filters are to be installed. Sample elevations of the building with UV, the blowers, and cloth filters are shown in Figure 5-10. Example elevations of this building with UV and blower equipment only (no cloth filters) are shown in Figure 5-11.

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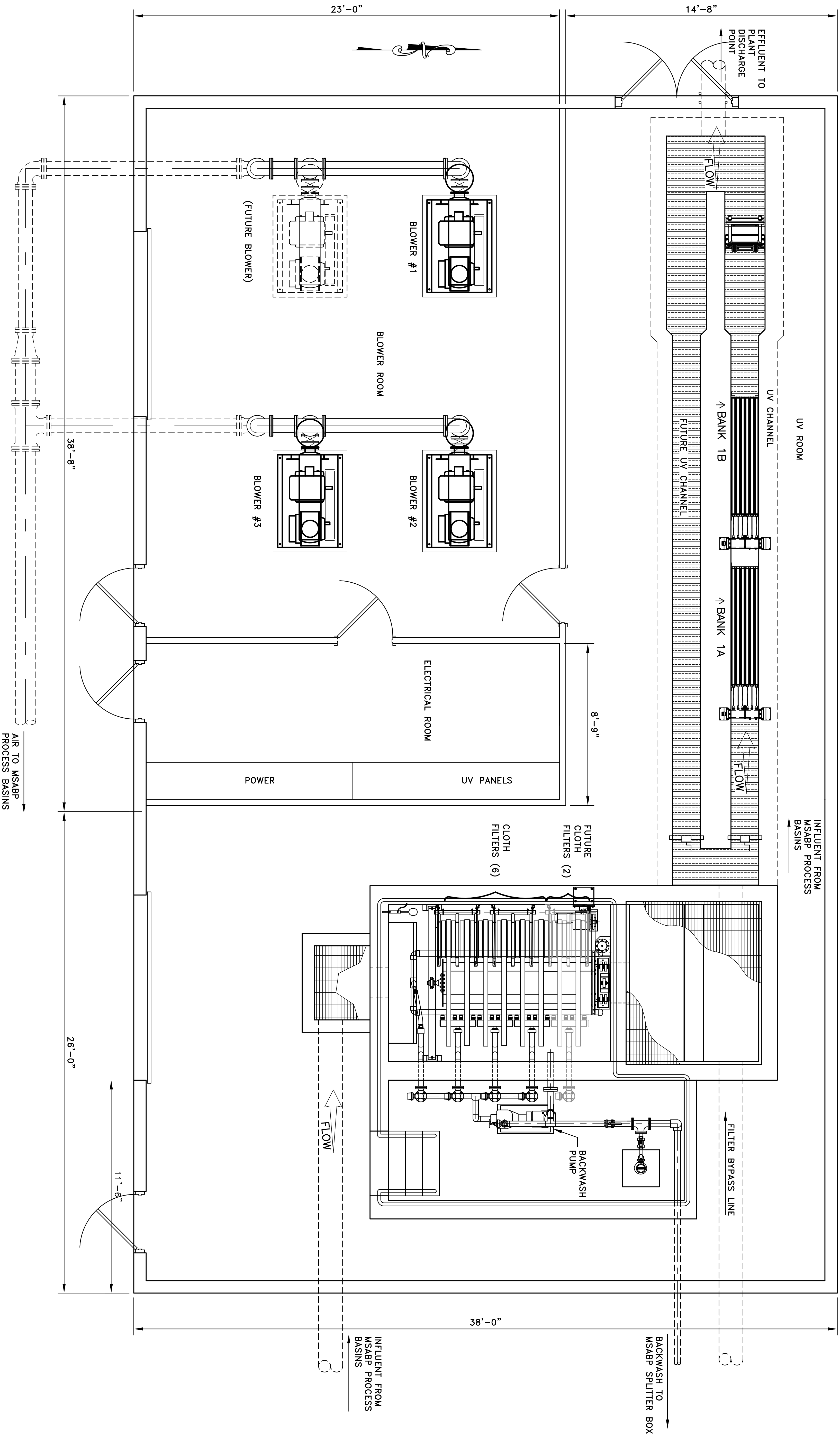

FLOOR PLAN

SCALE: 3/8"=1'-0"

0 2 4

Scale In Feet

0 1/2 1

DRAWING IS NOT TO SCALE IF BAR DOES NOT MEASURE 1"

FIGURE

5-8

AQUA ENGINEERING, INC.
533 W. 2600 S., SUITE 275 BOUNTIFUL, UT 84010
PHONE (801) 299-1327 FAX (801) 299-0153

DRIGGS, IDAHO

WASTEWATER TREATMENT FACILITY UPGRADE
BLOWER, UV AND DISK FILTER BUILDING
ARCHITECTURAL OPTION "C" PLAN

ORIGINAL				
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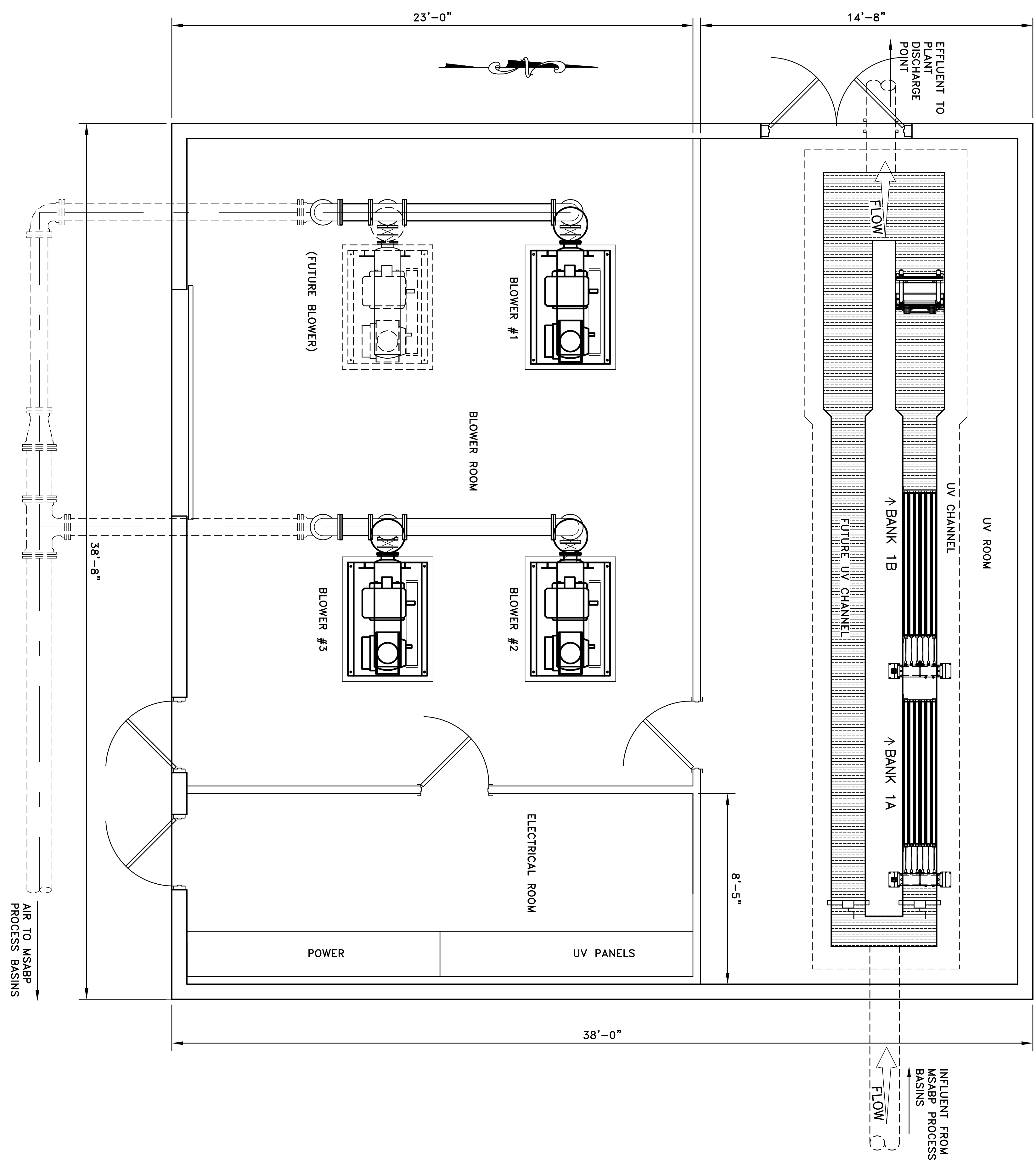

FLOOR PLAN

SCALE: 3/8"=1'-0"

0 2 4
Scale in Feet

DRAWING IS NOT TO SCALE IF BAR DOES NOT MEASURE 1"
0 1/2 1

FIGURE 5-9

AQUA ENGINEERING, INC.
533 W. 2600 S., SUITE 275 BOUNTIFUL, UT 84010
PHONE (801) 299-1327 FAX (801) 299-0153

DRIGGS, IDAHO

WASTEWATER TREATMENT FACILITY UPGRADE
UV AND BLOWER BUILDING
ARCHITECTURAL FLOOR PLAN

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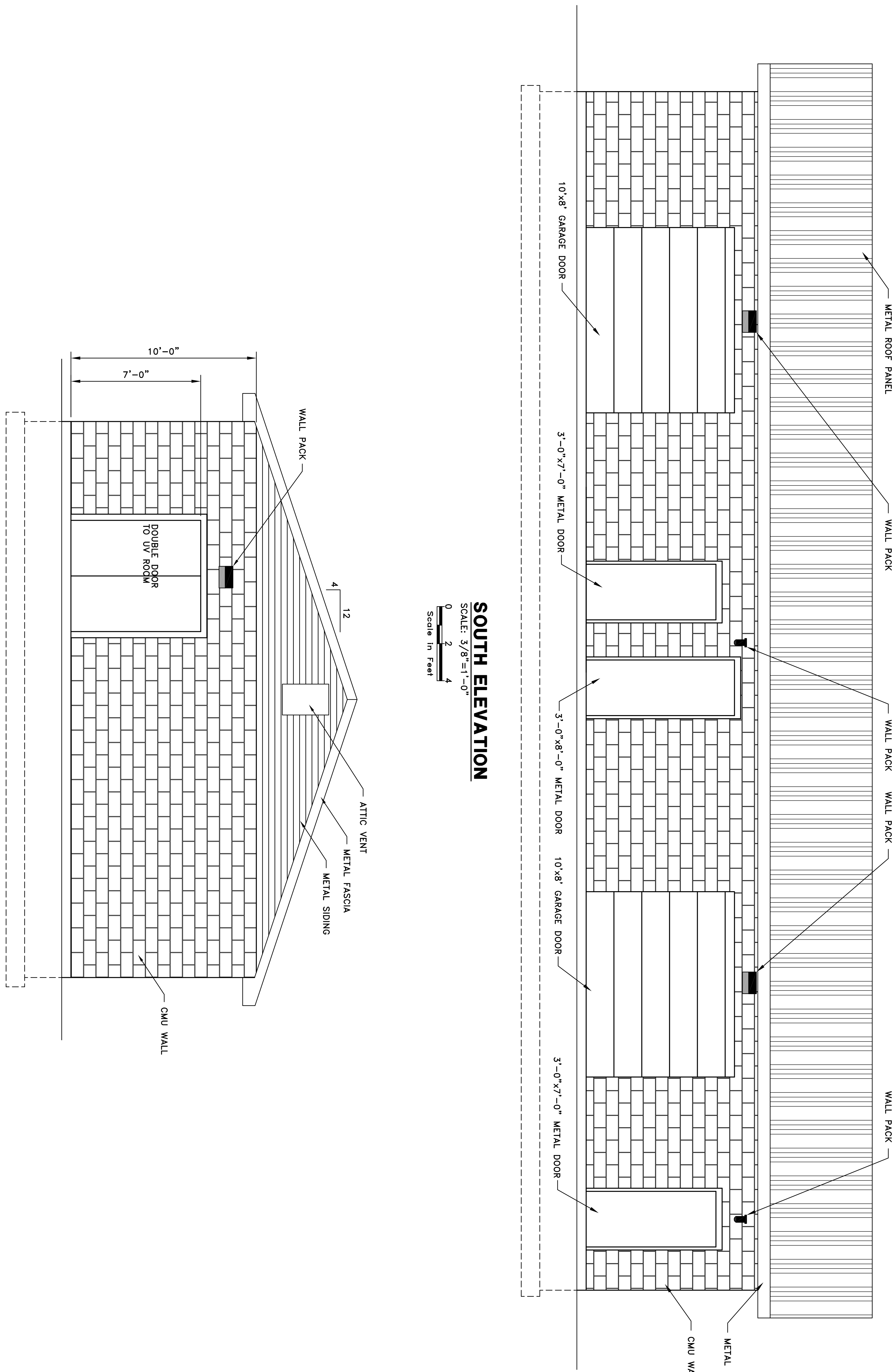

DRAWING IS NOT TO SCALE IF BAR DOES NOT MEASURE 1"

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FIGURE 5-10

AQUA ENGINEERING, INC.
533 W. 2600 S., SUITE 275 BOUNTIFUL, UT 84010
PHONE (801) 299-1327 FAX (801) 299-0153

DRIGGS, IDAHO

WASTEWATER TREATMENT FACILITY UPGRADE
UV / BLOWER BUILDING WITH CLOTH FILTER OPTION
ARCHITECTURAL OPTION "C" ELEVATIONS

		ORIGINAL		
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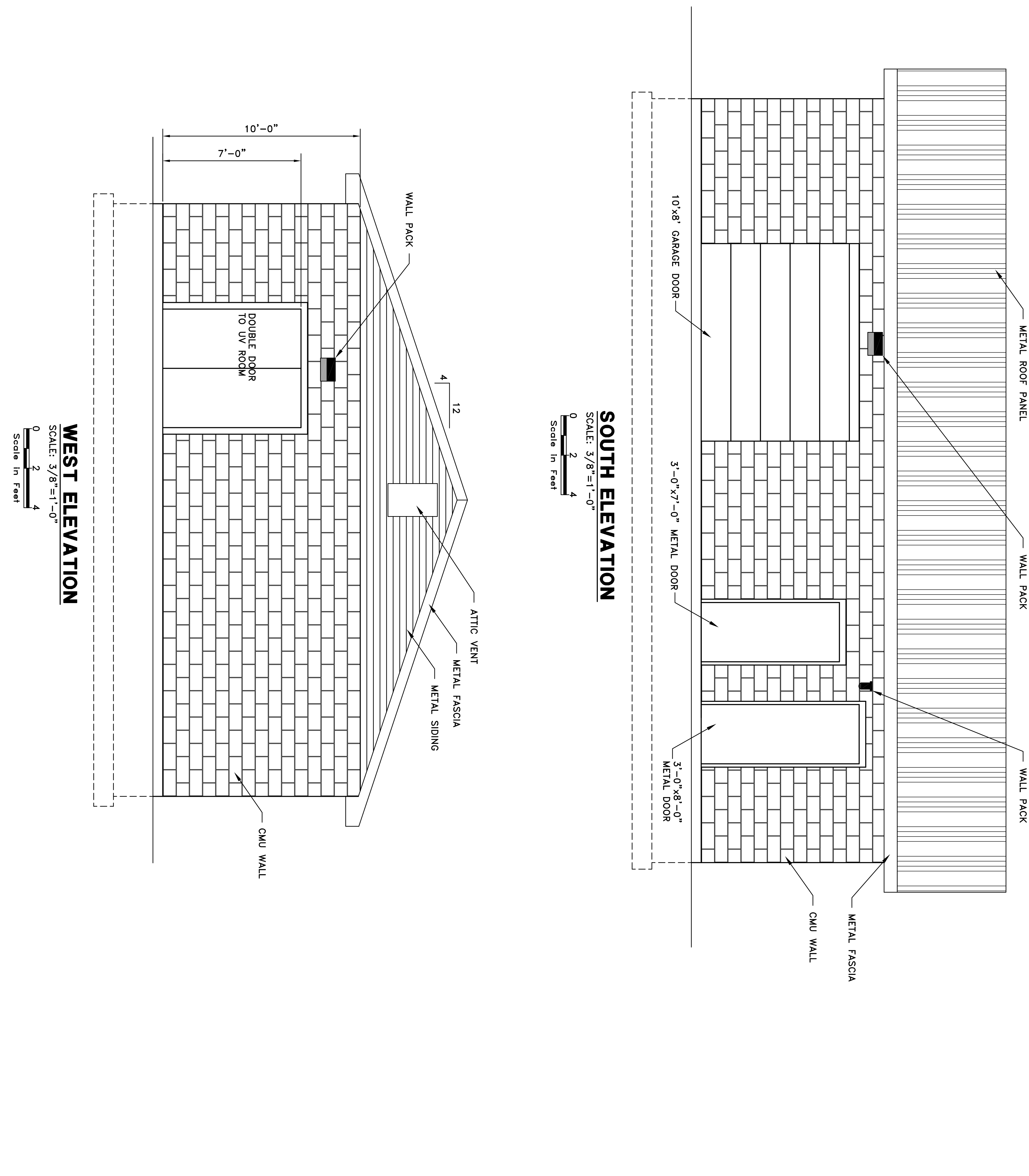

DRAWING IS NOT TO SCALE IF BAR DOES NOT MEASURE 1"

0 1/2 1

FIGURE 5-11

AQUA ENGINEERING, INC.
533 W. 2600 S., SUITE 275 BOUNTIFUL, UT 84010
PHONE (801) 299-1327 FAX (801) 299-0153

DRIGGS, IDAHO

WASTEWATER TREATMENT FACILITY UPGRADE
UV AND BLOWER BUILDING
ARCHITECTURAL ELEVATIONS

NO.	DATE	DESIGN	DRAWN	CHECKED
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		REVISIONS		

5.1.6 Future Additions

Though not a requirement now, the City may wish to implement phosphorous removal in the future. As shown in Figure 5-1, an additional flocculation chemical addition facility, coupled with a flash mixer and plate settler, could be installed to the north of the UV building. Flow would then pass from the MSABP basins into the flocculator and plate settler before entering the cloth filters and UV disinfection channel. This combination would provide phosphorous removal, and enhance the effluent quality even more. This alternative is presented as a preliminary expansion only, and was not explored in great detail.

Also, as previously mentioned, solar panels could be installed in the southwest corner of the site. Energy from the panels would be used to power or supplement UV disinfection equipment and possibly the blowers or other pumps. A separate analysis of the energy savings and costs of this option will need to be conducted. Currently, a dedicated grant of $220,000 is available for the solar panels.

5.2 Interim Disk Filter Installation

The proposed upgrades for the Teton Valley WRF will take some time to design, construct, and prepare for service. In the interim, it is proposed that disk filter equipment be purchased and installed in advanced to further treat effluent from the current aerated lagoon process. This temporary installation is not a cure-all for all effluent exceedances the plant experiences, but will certainly improve effluent quality during the main upgrade process. This will help show a good faith effort to the EPA and other agencies of concern while the long-term solution is designed and completed.

This proposal will integrate the disk filters in the existing hydraulic profile of the lagoon system. As the two smaller lagoons will be backfilled for the WRF upgrade, the disk filters would be installed and connected to existing inter-lagoon piping feeding into one of these two ponds with effluent from the disk filters tied into the WRF discharge piping. Backwash from the disk filters would be directed back to one of the remaining lagoons. Several options in terms of the number and size of filter tanks exist. Common to all options, each 2-disk set represents a treatment capacity of 0.45 MGD (315 gpm). Highlights of the disk filter options are:

1) Steel tank sized for 2 disks; Cost is $125,000 now, and an additional $125,000 for second two-disk tank ($250,000 total for 0.9 MGD). Future third 2-disk tank could be added when 1.35 MGD capacity needed (additional $125,000 at today's price).

   2 Disk tank is 8'x10'x11' (LxWxH)

2) Steel tank sized for 4 disks with 2 disks included now would cost $138,000, with an additional $75,000 for two additional disks installed in the same tank for completing the upgrade ($213,000 total for 0.9 MGD). Would need to add additional 2-disk tank to reach 1.35 MGD capacity ($125,000 at today's price). This would require more complicated flow splitting between 4-disk and 2-disk tanks in the future.

   4 Disk tank is 15'x10'x11' (LxWxH)

3) Steel tank sized for 6 disks with 2 disks now, 2 additional disks during construction to increase capacity to 0.9 MGD and room for 2 more disks in the future for ultimate capacity of 1.35 MGD. Cost would be roughly $160,000 for tank and 2 disks, plus additional $75,000 to add two more disks. Add 2 more disks to reach 1.35 MGD (additional $75,000 at today's price).

   6 Disk tank is 19'x10'x11' (LxWxH)

4) Install smaller 2-disk tank for temporary installation, then construct a concrete basin large enough for 6 disks. The 2 initial disks could be transferred into the concrete basin with two additional disks installed to reach 0.9 MGD. Space is available in the concrete basin for 2 more disks (6 total) to reach 1.35 MGD capacity. This option would be less expensive in terms of filter equipment, but there are added costs for the concrete basin through the contractor. Equipment cost for this option was not readily available. A cost analysis should be performed to compare extra concrete expense with equipment savings.

5) Finally, a 2-disk tank could be purchased and installed temporarily as described in option #1 and the complete 2-disk apparatus sold and salvaged after completion of the upgrade. This option would not commit the WRF to a specific make/model of filter disks for the

final upgrade. A new concrete basin sized to hold 6 disks would be constructed as part of the upgrade (as described in option #4). Equipment proposals from several disk filter manufactures would be solicited for the final concrete basin installation.

In conclusion, all options would allow temporary installation and transfer of the equipment to the new building when construction is complete or re-selling/salvaging the equipment once the final disk filter facility is operational. The 2-disk tank would be the easiest to install temporarily, but would be more expensive in the long run to purchase additional separate tank units. This option would also require the largest building space (3 separate tanks).

The 4-disk and 6-disk tanks would be more difficult to install temporarily (larger tank), but would be less expensive in terms of equipment costs and would require less building space. The concrete option would also have a smaller footprint (similar to the 6-disk tank option). All prices include backwash pumps, inter-connecting piping, drive motors, and other components that are typically provided with disk filter equipment.

CHAPTER 6 - PRELIMINARY BUDGET ESTIMATES

A preliminary engineering cost analysis for upgrading the Driggs WRF to MSABP technology was conducted. The four options presented in this document were analyzed, and the cost and budget of the recommended alternative is presented here. The analysis includes estimates for all necessary buildings; site work; and equipment including: pumps; grit removal; headworks screening; MSABP basins and blowers; cloth filters, and UV disinfection equipment. In addition, engineering, construction and installation costs are estimated to acquire a total project cost. Preliminary operation and maintenance cost estimates are also presented for the recommended alternative.

6.1 Initial Capital Costs

Initial capital cost estimates include costs for new buildings, concrete work, earthwork, new equipment, piping/valving, installation, electrical work, and controls. The recommended alternative includes installing Salsnes filters in the headworks expansion as well as the cloth filters. The total estimated cost is around $8.6 million. Table 6-1 shows a breakdown of the costs for this alternative.

Table 6-1: Preliminary cost estimate for Option A-2.

OPTION A-2: SALSNES FILTERS WITH CLOTH FILTERS, AND NO GRIT REMOVAL					
Item	**New Headworks Building - Salsnes Filters WITHOUT Grit Removal**				
1	Diversion Box w/ Bypass Line	ls	1	$6,500	$6,500
2	New Building (35' x 45')	sq ft	1,575	$150	$236,250
3	Wet Well	cu. yd.	13	$1,000	$13,000
4	Submersible Pumps	ea	3	$20,000	$60,000
5	Salsnes Filters	ea	2	$275,000	$550,000
6	HVAC	ls	1	$15,000	$15,000
7	Miscellaneous Metals	ls	1	$30,000	$30,000
8	Equipment Installation	ls	1	$100,000	$100,000
9	Electrical and Controls	ls	1	$181,935	$181,935
			HEADWORKS SUBTOTAL		**$1,192,685**
Item	**UV Disinfection WITH Cloth Filters**				
1	UV Channel Concrete	cu. yd.	28	$1,000	$28,000
2	UV Equipment	ls	1	$125,000	$125,000
3	Cloth Filters	ls	1	$250,000	$250,000
4	UV & Blower Building	sq ft	2470	$100	$247,000
5	HVAC	ls	1	$20,000	$20,000
6	Miscellaneous Metals	ls	1	$25,000	$25,000
7	Equipment Installation	ls	1	$120,000	$120,000
8	Electrical and Controls	ls	1	$146,700	$146,700
				UV SUBTOTAL	**$961,700**
Item	**MSABP Basins & Equipment**				
1	MSABP Basin Concrete	cu. yd.	1,750	$1,000	$1,750,000
2	Splitter Box & Collection Box	cu. yd.	20	$1,000	$20,000
3	MSABP Equipment (2 - 12 stage basins)	ls	1	$1,300,000	$1,300,000
4	Blowers	ea	3	$60,000	$180,000
5	Misc. Valves/Piping	ls	1	$120,000	$120,000
6	Miscellaneous Metals	ls	1	$30,000	$30,000
7	Equipment Installation	ls	1	$180,000	$180,000
8	Electrical and Controls	ls	1	$358,000	$358,000
			MSABP SUBTOTAL		**$3,938,000**
Item	**General Construction and Engineering**				
1	Yard Piping	ls	1	$80,000	$80,000
2	Site Work	ls	1	$150,000	$150,000
3	Mobilization and Profit		10%		$632,239
		CONSTRUCTION SUBTOTAL			**$6,954,624**
4	Contingency		10%		$695,462
5	Engineering Services		6.2%		$431,187
6	Construction Administration		7.3%		$507,688
			GRAND TOTAL		**$8,588,960**

6.2 Operation and Maintenance Costs

Costs associated with running the upgraded plant, including labor, utilities, replacement materials, and equipment maintenance/repairs were estimated for the recommended alternative. Budget numbers provided by the City of Driggs for the total annual O&M costs to operate existing plant were used to establish and compare O&M cost estimates for the new plant. Major expense categories include staff and management salaries, supplies and chemicals, training, utilities, and maintenance. A breakdown of specific expenses for each of these categories is provided in the appendix.

The proposed process will not require any additional staff and should not significantly increase the hours spent by current operators to run. The total utility costs will increase due to the power requirements of the additional pumps, screens, blowers, cloth filter train, and UV modules along with periodically operating the existing blowers and lagoons. Costs for maintenance and repairs will increase slightly as there will be more equipment to maintain, especially if the existing aeration lagoon equipment is utilized for overflow and equalization purposes. However, the equipment proposed for this upgrade is new and is expected to have low maintenance and upkeep costs. The MSABP basins themselves have no mechanical equipment other than the blowers that supply air to the basins. Table 6-2 compares the O&M costs of the current process to the estimated O&M costs of the updated plant. A detailed breakdown of these costs is provided in the appendix.

It appears that the O&M costs for the new process will not significantly increase the total annual O&M costs. The simplified operation and efficient equipment help minimize labor and energy cost increases, and scheduled maintenance and repair costs are low for the new equipment. This estimate does not account for the energy costs from running the existing blowers and treatment lagoons, which may be necessary for bypass or emergency situations.

While the total annual costs will be slightly higher, the annual cost per daily gallon treatment capacity (annual O&M cost per gpd capacity) decreases significantly with the new process from \$1.30 to \$0.75. This indicates that the new technology is more efficient and cost effective than the existing process, and is therefore an effective upgrade to expand the capacity and service life of the WRF. Using an inflation rate of 3.0% for all costs except the existing loan payments (which remain constant), the anticipated annual O&M costs will be $680,000 by 2011.

Table 6-2: Estimated O&M cost comparison for existing and proposed processes.

Category	COST (2009)	
	Proposed Plant	Existing Plant
Salaries & Management	$203,238	$203,238
Utilities	$57,159	$28,000
Supplies & Materials	$52,600	$74,600
Training & Safety	$15,500	$10,500
External Services & Maintenance	$210,537	$210,537
Existing Loan Payments*	$124,795	$124,795
TOTAL Annual O&M COSTS	**$663,829**	**$651,670**
Actual Treatment Capacity (MGD)	**0.90**	**0.50**
Annual Cost per GPD Capacity	**$0.75**	**$1.30**

*Existing debt consists of 4 loans and bonds, which expire at different times over the next 20 years.

It should also be noted that the "Utilities" portion of the O&M cost estimates do not account for energy savings from the solar panels. A study on the energy savings and exact implementation of the solar panels had not been conducted at the time this report was finalized. Nonetheless, the solar panels will reduce the annual energy costs to operate the upgraded WRF.

6.3 Current and Proposed Sewer Budget

The following sections summarize the current fee structure and sewer budget. The facility is owned and operated by the City of Driggs, with Victor buying in to use the sewer treatment facility.

6.3.1 Connection Fees

New connections in Driggs and the surrounding unincorporated area are charged $2,600 for a standard, single-unit residential connection. Commercial and multi-unit connection fees charged on a per-faucet and estimated usage basis. This is a typical connection fee structure, and ensures that larger developments pay their fair share of connection fees into the sewer fund.

Victor charges a connection fee of $5,000 per ERC (aka ERU) within city limits and $7,500 for connections outside of the city. For this purpose, an ERU is equivalent to a potential flow of 300 gpd. Thus, each new connection is charged $5,000 for every 300 gpd potential it may contribute to the system. Connection fee revenue in both cities will likely be lower than projected for the next few years, due to the recent economic slowdown. However, over the 20-year design life of the WRF upgrade, the income should average out to the 2-4% growth used in this report. Thus, the connection fee income deficits and surpluses over the design life will average out.

Presently, Driggs does not receive any of the connection fees for new connections made in Victor, nor are these fees used by the existing WRF. This is part of the existing agreement between Driggs and Victor, and was established on the basis that the current facility is owned and operated solely by Driggs, with Victor buying capacity through a usage-based fee. However, this agreement (provided in the Appendix) does state that Victor and Driggs agree to share the cost of improving the facility including upgrades to increase hydraulic and biological capacity. Thus, if the WRF is to be upgraded into a regional-capacity facility and Victor is to continue utilizing the facility, at least a portion of these connections fees should be collected to cover expenses at the WRF. Furthermore, connection fees in general, especially in Driggs, may need to be increased over the next few years to cover the expenses of expanding the WRF.

6.3.2 User Fees

The current arrangement collects user fees from users in Driggs and the unincorporated areas on a monthly basis. These fees are assessed on a per meter basis. User fees from Victor residents are collected in a different matter, which is discussed in a succeeding paragraph. Individual residencies are charged $31.50 per month if they are located within Driggs, and $47.25 (or 1.5 times the base rate) for connections outside of the City. Commercial connections are also charged the base rate of $31.50 for the first 10,000 gallons, with an additional charge of $1.30 per 1,000 gallons over 10,000 gallons ($1.95 per 1,000 gallons over 10,000 for connections located outside of the City).

Multi-unit residencies such as apartments and condominiums are connected in one of two ways: 1) all of the units or several units share one master meter, or 2) each individual unit has a separate meter. In either case, the location is charged $31.50 (or $47.25) per meter, plus a surcharge for flows exceeding 10,000 gallons per month (as with commercial connections). Thus, nearly every multi-unit connection has opted for the single master meter, meaning that even a large condominium complex may potentially pay only the base fee. Another problem arises from the timing of flow measurements. Presently, flows at the multi-unit and commercial meters are measured in May and October of each year, with the average used to establish the excess flow and surcharges for the next 6 months. However, many condominiums, hotels, and commercial users experience their peak usage in December and mid-summer months. Consequently, as flows from many of these connections are at a minimum in May and October, these units can be undercharged. The Driggs City service area currently encompasses an estimated 515 residential and 142 commercial connections, including 63 residential and 20 commercial connections located outside City limits. A breakdown of the income for these areas is shown in Table 6-3.

The user fee structure for Victor is different. A single residential unit is charged a flat fee of $32.80 per month. For commercial and multi-unit connections, the number of ERCs used to establish the connection is also used for the monthly user fee. These connections are charged $32.80 for the first ERC, then 50% of the flat fee for each additional ERC. For example, a 10 ERC commercial connection would be charged 5.5 times the flat rate, or $180.40 per month. This method avoids problems with multi-unit and seasonal connections (hotels, condominiums etc…) as the fees are related directly to the number ERCs, and are independent of seasonal flow variations. For last year's budget, Victor collected $405,085 in user fees. Users located outside of the city are not pro-rated as with Driggs. However, note that users from Victor located outside of city limits are charged a higher connection fee (1.5 times the standard fee).

Due to the existing agreement between Driggs and Victor, only a portion of Victor's user fees are paid to Driggs to cover O&M costs of the WRF. Driggs collects its share of the Victor user fees on a quarterly basis. Total flow from the Victor lift station is measured, and Victor is charged for the total flow pumped for a given quarter. At present, this fee is determined by calculating

Table 6-3: City of Driggs annual user fee income, from the 2008 budget

Connection Type	Number of Connections	Base Fee Revenue
Residential – In City	452	$170,856
Residential – Out of City	63	$35,721
Commercial – 0.75"	83	$31,374
Commercial – 1"	12	$4,536
Commercial – 1.5"	10	$3,780
Commercial – 2"	14	$5,292
Commercial – 3"	1	$378
Commercial – 4"	1	$378
Commercial – 6"	1	$378
Commercial – 1" OC	3	$1,701
Commercial – 2" OC	7	$3,969
Commercial – 3" OC	8	$4,536
Commercial – 6" OC	2	$1,134
Base Fee Subtotal		$264,033
Unincorporated\Surplus Usage Fee Subtotal*		$166,550
TOTAL DRIGGS REVENUE		**$430,583**

*Estimated from 2008 budget.

Victor's portion of the total WRF influent, and multiplying that ratio by the costs associated directly with running the WRF. Most recently, this has equated to 20-25% of Victor's user fee revenue being paid to Driggs towards WRF operation and maintenance expenses. These include some of the direct utility and maintenance costs, along with one of the existing sewer bonds. However, other expenses, including some staff and operator salaries, depreciation, management, some chemical and utility expenses, legal and engineering services, and several other facility loan payments are not factored into these fees. This arrangement may need to be updated to ensure that

Victor pays a proportionately even share of its user fee revenue into the WRF. In 2008, Victor paid $93,956 of the $405,085 it collected in user fees to Driggs. For 2009, it is estimated that Victor will have paid $107,340 to Driggs in user fees.

6.3.3 Current Sewer Budget

The 2009 budget for the WRF, provided by Driggs, is used to establish a typical annual income for the sewer fund. Income sources include user fees, connection fees, and interest income, as summarized in Table 6-4. Most of this income is fairly stable as it is based on current user fees, populations, and the existing agreement between Victor and Driggs. In contrast, connection fee revenue is highly variable, and will likely be much lower than anticipated for 2009 and the next few years. Excluding income from connection fees, the annual income is $638,000.

Table 6-4: Current sewer revenue (2009)

Sewer Revenue	Amount
Driggs - Area User Fees	$445,000
Connection Fees*	$210,000
Victor – Area User Fees	$107,340
Interest Income	$34,000
Other Income	$12,110
Total	**$848,090**

*Connection fee revenue will likely be significantly less than this amount.

The annual O&M and debt service payments are around $650,000. This estimate does not include one-time costs and other special projects associated with the sewer budget, and is intended to represent fixed annual expenses. Accordingly, the projected 2009 income should be sufficient to cover these expenses, even if connection fee revenue is less than anticipated.

6.3.4 Future Sewer Expenses

Using the capital expenses budget from Table 6-1 of roughly $8.6 million and the O&M budget presented in this section, the future budgetary needs of the WRF are established. Discussion with Victor and Driggs has established that each city might have $1 million to pay towards the capital costs of the WRF upgrade. Furthermore, grants of up to 30% ($2.53 million) may be available for this project as well. However, this analysis will assume that all additional funding beyond the $2 million from the cities will consist of private loans in the amount of $6.8 million. The total annual cost, including new debt service, existing debt service, and projected 2011 O&M is $1,164,827. Table 6-5 shows the annual sewer budget for this loan and the estimated O&M costs for various interest rates.

Table 6-5: Estimated annual sewer expenses for remaining debt and O&M costs

Estimated Annual WRF Expenses				
New Loan Amount	**Interest Rate**	**New Debt Service**	**O&M Costs***	**Total Expenses**
$6,588,960	0.00%	$329,448	$680,000	$1,009,448
$6,588,960	1.00%	$365,129	$680,000	$1,045,129
$6,588,960	2.00%	$402,959	$680,000	$1,082,959
$6,588,960	3.00%	$442,882	$680,000	$1,122,881
$6,588,960	**4.00%**	**$484,827**	**$680,000**	**$1,164,827**
$6,588,960	5.00%	$528,715	$680,000	$1,208,715

*This amount includes payments for loans on existing debt.

6.3.5 Future Sewer Revenue and Budget

Future revenues are difficult to project, and certain assumptions must be made. The specifics of a new agreement between Driggs and Victor is beyond the scope of this report, however, some general assumptions can be made. For all areas of interest, it is assumed that the respective base user rates will remain the same, and that the ratio of residential to commercial/multi-unit connections will remain constant over the growth period. Currently, Victor pays roughly 20-25% of its total user fee revenue to Driggs. Any new agreement would likely direct most of this revenue to the new WRF to cover all loan and O&M costs. However, Victor will require some of the revenue to cover internal, overhead, staff, city officials, and other costs. Thus, this budget considers that Victor will keep 20% of the user fees for internal costs, with the remaining 80% paid into the WRF budget.

Driggs may desire to change their user fee policy for commercial and multi-unit connections, charging on a per unit basis rather than on an average flow basis. This change would ensure that larger, seasonal users pay their fair share, as the plant must be sized to handle peak seasonal flows. Nonetheless, this change has not been considered in this budget, and would simply translate to additional annual surplus in the budget.

Furthermore, this budget maintains the connection fee structure for Victor (i.e. $5,000 per ERC). At this time, it is recommended that Driggs adopt a similar connection fee structure to that used in Victor. This means that the base, single-unit connection fee will increase from $2,600 to $5,000. The budget presented here assumes that both cities charge a $5,000 new connection fee. Furthermore, commercial and multi-unit connections will be assessed a fee based on their potential flow as it relates to number of ERCs. In practice, roughly 50% of the total new connection fees remain for the sewer budget. Therefore, for every $5,000 fee collected, only $2,500 remains to cover debt and other expenses of the WRF. This is a typical assumption for most rural areas. Finally, these estimates assume that O&M costs will increase annually by 3% (inflation) and an overall average growth rate of 4% for the area. With all of these assumptions, a sample future regional sewer budget is established (Table 6-6).

This budget determines that in 2011 (the estimated start-year of the new facility), the total annual expenses will be $1,164,827. As the total of user and connection fees must cover these expenses in the first year, the user rate is adjusted to cover the costs. Using the estimated user and connection fee discussed above along with the current estimate of existing ERCs, Victor and Driggs would need to collect an average of $60.27 per month per ERC; a significant increase from current rates. Typical sewer budgets are established so that the district will break even the first year of the new plant, and begin to accumulate surplus funds in subsequent years. After 2011, annual surplus should increase from year to year. The calculated total surplus by 2030 is in excess of $8 million. These monies will be available for future projects and upgrades. Connection fees and user rates may be adjusted in the future, but these calculations assume no change in the base rates through 2030.

In summary, this sample future budget is only one of several scenarios. Discussion between Driggs and Victor regarding the details of connection and user fee revenue should be held as soon as possible to help determine the feasibility of implementing these upgrades. Many issues need to be addressed including connection fees, user rates, and current and future debt sharing between Victor and Driggs. Furthermore, both cities should seek and apply for grant and loan funding to reduce the required user fees. Too many variables involving updating the existing agreement, user rates, connection fees, and possible grant/loan monies exist to provide a comprehensive analysis of each. The budget presented here is provided as a preliminary step in determining future inter-city agreements, user rates, etc…

Table 6-6: Proposed annual budget for the upgraded, regional WRF

	USER FEE REVENUE*				CONNECTION FEE REVENUE				ANNUAL BUDGET				
Year	Driggs		Victor		Driggs		Victor		Total	New Debt	O&M	Total	Annual
	ERCs	Fee Revenue	ERCs	Fee Revenue	New ERCs	Fee Revenue	New ERCs	Fee Revenue	Revenue	Payment	Expenses	Expenses	Surplus
2011	786	$568,520	772	$446,715	30	$75,000	30	$75,000	**$1,165,235**	$484,827	$680,000	**$1,164,827**	**$408**
2012	817	$591,261	803	$464,584	31	$78,600	31	$77,200	**$1,211,645**	$484,827	$686,226	**$1,171,053**	**$40,592**
2013	850	$614,911	835	$483,167	33	$81,744	32	$80,288	**$1,260,110**	$484,827	$703,382	**$1,188,209**	**$71,902**
2014	884	$639,508	868	$502,494	34	$85,014	33	$83,500	**$1,310,515**	$484,827	$721,052	**$1,205,879**	**$104,636**
2015	920	$665,088	903	$522,593	35	$88,414	35	$86,840	**$1,362,935**	$484,827	$739,253	**$1,224,080**	**$138,856**
2016	956	$691,692	939	$543,497	37	$91,951	36	$90,313	**$1,417,453**	$484,827	$757,999	**$1,242,826**	**$174,626**
2017	995	$719,359	977	$565,237	38	$95,629	38	$93,926	**$1,474,151**	$484,827	$764,168	**$1,248,996**	**$225,155**
2018	1,034	$748,134	1,016	$587,847	40	$99,454	39	$97,683	**$1,533,117**	$484,827	$784,057	**$1,268,884**	**$264,233**
2019	1,076	$778,059	1,057	$611,360	41	$103,432	41	$101,590	**$1,594,442**	$484,827	$804,542	**$1,289,369**	**$305,073**
2020	1,119	$809,181	1,099	$635,815	43	$107,570	42	$105,654	**$1,658,219**	$484,827	$825,641	**$1,310,468**	**$347,751**
2021	1,163	$841,549	1,143	$661,247	45	$111,872	44	$109,880	**$1,724,548**	$484,827	$847,374	**$1,332,201**	**$392,347**
2022	1,210	$875,211	1,188	$687,697	47	$116,347	46	$114,275	**$1,793,530**	$484,827	$784,798	**$1,269,625**	**$523,905**
2023	1,258	$910,219	1,236	$715,205	48	$121,001	48	$118,846	**$1,865,271**	$484,827	$807,854	**$1,292,681**	**$572,590**
2024	1,309	$946,628	1,285	$743,813	50	$125,841	49	$123,600	**$1,939,882**	$484,827	$831,602	**$1,316,429**	**$623,453**
2025	1,361	$984,493	1,337	$773,566	52	$130,875	51	$128,544	**$2,017,477**	$484,827	$856,062	**$1,340,889**	**$676,588**
2026	1,416	$1,023,873	1,390	$804,509	54	$136,110	53	$133,685	**$2,098,176**	$484,827	$881,256	**$1,366,083**	**$732,094**
2027	1,472	$1,064,828	1,446	$836,689	57	$141,554	56	$139,033	**$2,182,104**	$484,827	$907,205	**$1,392,033**	**$790,071**
2028	1,531	$1,107,421	1,504	$870,157	59	$147,216	58	$144,594	**$2,269,388**	$484,827	$917,669	**$1,402,496**	**$866,892**
2029	1,592	$1,151,718	1,564	$904,963	61	$153,105	60	$150,378	**$2,360,163**	$484,827	$945,199	**$1,430,026**	**$930,137**
2030	1,656	$1,197,786	1,626	$941,161	64	$159,229	63	$156,393	**$2,454,570**	$484,827	$973,555	**$1,458,382**	**$996,188**
*Considered to be active users, this number may be less than the total number of connections											TOTAL ESTIMATED SURPLUS		$8,777,498

6.3.6 Existing Sewer Agreement

The entire existing agreement between Driggs and Victor is provided in the Appendix. The agreement is summarized here to determine existing obligations for each city as well as open discussion for future agreements based on a regional Teton Valley WRF. The main points of the agreement are understood as follows:

- Item #2: Driggs and Victor shall share in future cost of capital improvements based on each city's portion of the total flow.
- Item #4: Any connection in excess of ten (10) ERUs (aka ERCs) must be approved by both cities. This would also apply to any user who may contribute excessive biological loads as well as hydraulic loads.
- Item #6: Victor currently agrees to pay Driggs a portion of their user fees based on a per 1,000 gallon rate of the total measured flow into the plant.
- Item #8: Some adjustment to fees may be incurred depending on the "strength" (i.e. biological concentration
- Item #16: Both cities are to dedicate all funds collected from connection fees that are not otherwise legally obligated to create a Capital Reserve Fund.
- Item #17: Each party shall be responsible for their own collection system and trunk lines.

In summary, it appears that the current agreement is setup to allow Victor and Driggs to partner in performing capital improvements and that both cities were to form reserves for the purpose of these improvements. If both cities agree to become co-owners of the upgraded WRF, new arrangements concerning user fees and dividing of user/connection fee revenue between the WRF's needs and the two cities need to be addressed.

CHAPTER 7 - ENVIRONMENTAL INFORMATION DOCUMENTS

This section addresses the topics and required information from the Outline and Checklist of Environmental Information Documents (EIDs) as required by the Idaho Department of Environmental Quality. Several pieces of information requested in the EID outline have already been provided in the PER. Accordingly, references to the section and page number of the preceding chapters are provided where required topics have already been addressed. Otherwise, the topics unique to the EID requirements are addressed in the section. Furthermore, the appendix in this chapter contains all pertinent communication with regulatory agencies regarding this project as required by the Idaho DEQ. The structure of this chapter follows the order of topics in the Outline and Checklist for EIDs provided by the DEQ.

7.1 Cover Sheet

City of Driggs

60 South Main Street

Driggs, ID 83422

Daniel J. Powers, Mayor, City of Driggs

The scope of the Driggs, Idaho WRF upgrade project is limited to the property boundaries of the existing water reclamation facility site. This project includes installing new process buildings and basins to improve treatment quality and increase the overall capacity of the WRF. The upgrades will ensure that the WRF meets all NPDES permit effluent limits, including a newly imposed effluent ammonia limit of < 1.0 mg/L. These upgrades will incorporate new fine screens, a multi-stage activated biological process (MSABP), disk filtration, and UV disinfection. The remaining wastewater lagoons will be utilized as emergency backup and to store backwash from the disk filters. All proposed upgrades, structures, and buildings will be located within the existing WRF site. Two of the smaller, shallow wastewater cells will be backfilled, providing ample space to accommodate all the new facilities.

This Environmental Information Document (EID) was prepared in behalf of Driggs, ID and the proposed Teton Valley Regional Water Reclamation Facility. The EID contains the information requested by the Idaho Department of Environmental Quality to complete their Environmental Review. The project is not expected to impact the environment external to the existing wastewater treatment site due to construction activities and development encouraged by the increase of sewer treatment services. Table 7-1 outlines the project costs and funding.

Table 7-1: Project Cost and Funding

Estimated Construction Costs	
Collection System	$0
Treatment Facility	$8,588,960
Lift Stations	$0
Total Estimated Costs	
DEQ Share	$6,588,960*
Other Share	$2,000,000
Total Funding	$8,588,960

* This amount has yet to be determined.

The existing user charge in Driggs is $31.50 per month per meter (i.e. ERC) within city limits and $47.25 per month per meter outside of city limits. User charges in Victor are $32.80 per ERC per month. Larger connections are charged $32.80 per month for the first ERC and $16.40 per month for each additional ERC. Assuming that the remaining $4.59 million are funded through private loans, Driggs and Victor would need to collect an average of $60.27 per ERC per month. This represents an increase of $28.77 per month for the average Driggs user and $27.47 per month for the average Victor user. Depending on the amount of grant and other federal funding provided for this project, the increase in user fees may not be as large. Details on the existing and proposed future user fees are provided in Section 6.3.2 (pages 65-67) and 6.3.5 (pages 69-71) respectively of this document.

7.2 Purpose and Need for the Proposed Project

The existing WWTP has not reliably met NPDES discharge permit requirements and has received two formal Notices of Violations regarding excessive BOD, fecal coliform, e.coli and other parameters. Demand from Driggs, Victor, and the surrounding unincorporated areas has reached and often exceeded the current treatment capacity. Upgrades are needed to allow the plant to reliably meet permit requirements including a new effluent ammonia limit of < 1.0 mg/L which has been listed in the new draft permit scheduled to be imposed in the near future. Furthermore, the upgrades are planned to accommodate growth in the service area over the next 20 years.

A summary of the growth and future needs of the service area is provided in Section 2.2 (beginning on page 21) of this report.

7.3 Proposed Alternatives

This document is presented as an addendum to the original facility plan submitted by Nelson Engineering in 2006. The original facility plan discusses the following alternatives in detail; a summary is provided here for reference purposes. It should be noted that several of these upgrade options were based on larger (6-8%+) growth rates and estimate an average daily flow of 1.6 MGD by 2030. The most recent growth projections based on 4% growth predict 2030 flows to be around 0.90 MGD with maximum monthly flows of 1.1 MGD.

7.3.1 No Action Alternative

The No Action would provide no additional hydraulic capacity (estimated at 0.5 to 0.6 MGD depending on the strength of the influent) and would not address issues with BOD, coliform, and e.coli effluent exceedances. In addition, the plant would not comply with the new effluent ammonia limit. Furthermore, the plant would have no additional capacity for any growth in the Teton Valley. The no action alternative is not practical or environmentally sound and is not a feasible option.

7.3.2 Aerated Lagoon Treatment Plant

An aerated lagoon system would be capable of meeting effluent BOD and TSS requirements. This proposal would provide 6 equally sized basins, four providing aeration and 2 for settling purposes. Each basin would be roughly 420 by 1598 feet with an operating water depth of 12 feet. Chlorine disinfection facilities would be expanded to accommodate larger flows and provide adequate contact time for disinfection (Nelson, 2006).

7.3.3 Activated Sludge Plant

This upgrade would incorporate a new headworks facility with fine screening that feeds into the aeration basins. Effluent from the aeration basins would pass through secondary clarifiers. Waste solids (WAS) would be directed to new aerobic digesters and on to a biosolids dryer. Depending on the biosolids drying equipment used, the solids could be utilized for land application. Secondary clarifier effluent would pass through UV disinfection units and out to the discharge point (Nelson, 2006).

7.3.4 Membrane Bioreactor (MBR) Plant

The membrane bioreactor would incorporate microfiltration membranes to separate the water from solids and other deleterious components in the wastewater. This alternative would require fine screens (≤2mm), new aeration and membrane basins to house diffusers and membrane equipment. The 2030 design entails three basins each sized roughly 130'x42' by 16' tall. A new UV disinfection system would replace the existing chlorination system. Finally, this upgrade would include sludge dewatering facilities similar to those described for the Activated Sludge Plant alternative (Nelson, 2006).

7.3.5 Single Basin Nutrient Removal Plant

This alternative would also install fine screens (2 mm) in a new headworks facility. Flow would pass from the headworks into two new earth-formed lined aeration basins. Air from new process blowers would be delivered to the basins via suspended floating aeration chains. Effluent from the ponds would be directed to two new secondary clarifiers and on to a new UV disinfection system. Sludge removal and digestion would be similar to that discussed in the Aerated Lagoon Treatment Plant alternative (Nelson, 2006).

7.3.6 Integrated Fixed Film and Activated Sludge (IFAS) Plant

This alternative incorporates a new headworks facility with fine screens (3mm). Flow from the headworks would enter the new IFAS basins that include aeration and anoxic basins. Effluent from the IFAS basins would be directed to two new secondary clarifiers and on to a new UV disinfection system. Sludge removal and digestion would be similar to that discussed in the Aerated Lagoon Treatment Plant alternative (Nelson, 2006).

7.3.7 Multi-Stage Activated Biological Process (MSABP) Plant

This alternative incorporates a new headworks building for fine screening a new MSABP basins. The initial upgrade for 2030 design provides two MSABP basins, each roughly 90'x40' with an operating water depth of around 16', sufficient for 0.9 MGD average daily flow. Each tank would contain 12 specific zones that provide varying conditions (aerobic, anoxic, etc...) and bacteria. The MSABP basins would provide ammonia removal and BOD removal sufficient to meet and exceed the effluent permit requirements. Due to the nature of the MSABP process, no sludge removal or dewatering equipment is required as the system is designed to consume waste and lesser organisms as flow progresses through the tanks. A disk filter system is installed on the effluent side of the MSABP tanks to capture and remove any remaining solids from the system. Finally, UV disinfection channels provide disinfection prior to discharge from the WRF.

Ample space is available to install future MSABP tanks as growth dictates, with each tank increasing capacity by 0.45 MGD. This process was evaluated as part of this facility plan addendum. The addendum was requested by the City of Driggs to reevaluate the projected growth, design criteria, and recommendations proposed in the 2006 facility plan. As discussed in

Section 2.2 of this document, growth in the service area is not predicted to be as rapid as originally stated in the 2006 document. Additional research of existing users and future growth, along with more detailed analysis of influent flows, BOD concentrations etc… were conducted to establish more specific and detailed design criteria for the WWTP. The newly proposed MSABP alternative is discussed in detail in Chapters 4 and 5 of this document. A summary of the MSABP technology is provided in Chapter 4 (page 33) and the proposed implementation of this technology at the existing WRF site is discussed in Chapter 5 (page 42).

7.3.8 Proposed Action

After reevaluating the growth potential of the service area, upgrading the WRF utilizing the MSABP process discussed in this report was determined to be the best and most cost effective alternative. The MSAPB alternative will meet all permit effluent requirements including the new ammonia limit, and will accommodate current and future growth through 2030. Furthermore, the process is easily expandable beyond the initial proposed design capacity of 0.9 MGD if and when growth in the area necessitates. As noted in section 2.1.1 (page 11) of this document, the WRF can experience large fluctuations in influent flow due to seasonal users and summer infiltration.

The MSABP process is very flexible in terms of hydraulic loading. Pilot tests conducted with this technology show that as long as the biological loading is not exceeded, the influent flow has relatively minimal impact on the plant's performance. Thus, this technology will handle peak hour and maximum monthly flows without adversely affecting the performance or effluent quality of the WRF, therefore allowing a smaller facility to be constructed. Furthermore, this technology does not require any solids dewatering or disposal, further reducing capital and O&M costs.

7.4 Affected Environment

The upgraded WWTP will continue to serve the cities of Driggs, Victor, and the surrounding unincorporated areas. The proposed design accounts for anticipated growth in the existing service area through 2030, with contingency to add additional capacity in the future. All upgrades proposed in this report will be located on the existing WWTP site. No new land development or expansion beyond the current boundaries of the existing site is required. New structures will be located on the space created by backfilling two of the smaller treatment lagoons that are not needed for the upgraded process. Details of the proposed site plan and layout are provided in Chapter 5 of this document. This section provides a summary of the natural and manmade features relevant to this project. Some of the information has been repeated from the 2006 report to provide a consolidated summary.

The affected service area includes the cities of Driggs, Victor, and the surrounding unincorporated areas of the Teton Valley. As of 2009, the estimated population served by the WRF is 3,600. Current effluent flows vary seasonally, but in 2009 averaged around 400,000 gpd. Seasonal peaks, due to infiltration from snow melt, large precipitation events, and local agricultural activity, can significantly increase the hydraulic load to the WRF. These peaks are typically noted in late May through early July. 20-year growth estimates for the service area, discussed in section 2.2 (pages 21-25) of this document predict the WRF will need an average daily capacity of 0.9 MGD by 2030. Due to seasonal peak flows and typical peak hour flows noted at the existing WRF, it is recommended that the plant have a peak hour capacity of 1.8 MGD for regular months and 2.0 MGD for maximum monthly flows, based on 2030 design criteria. A summary of the proposed 2030 design criteria is provided in Table 3-1 (page 32).

<u>7.4.1 Physical Aspects – Topography, Geology, and Site Soils</u>

Driggs and Victor are located in the north eastern part of the Teton Basin in a valley ultimately drained by the Teton River. The City of Driggs is at an elevation of 6,100 feet. The basin and service area are bound by the Teton Mountain Range on the east, the Big Hole Mountain Range on the west, and the Snake River Mountain Range on the south (Nelson, 2006). The cities and surrounding service area lie atop Quaternary alluvial fan deposits, deposited by runoff from the surrounding mountains. Figure 7-1 provides a topographic map of the area.

The existing treatment plant lies at a relatively lower elevation in the basin, near several emergent springs that generally recharge from streams percolating through the alluvium. Areas west of Highway 33 form seasonal and permanent wetlands from springs and seepage feed from water infiltrating into the alluvium. Underlying silt and clay deposits beneath the alluvium prevent much of this infiltrated water from flowing deeper, causing it emerge in the lowland areas of the valley. Groundwater levels vary seasonally with snowmelt and runoff, precipitation, and

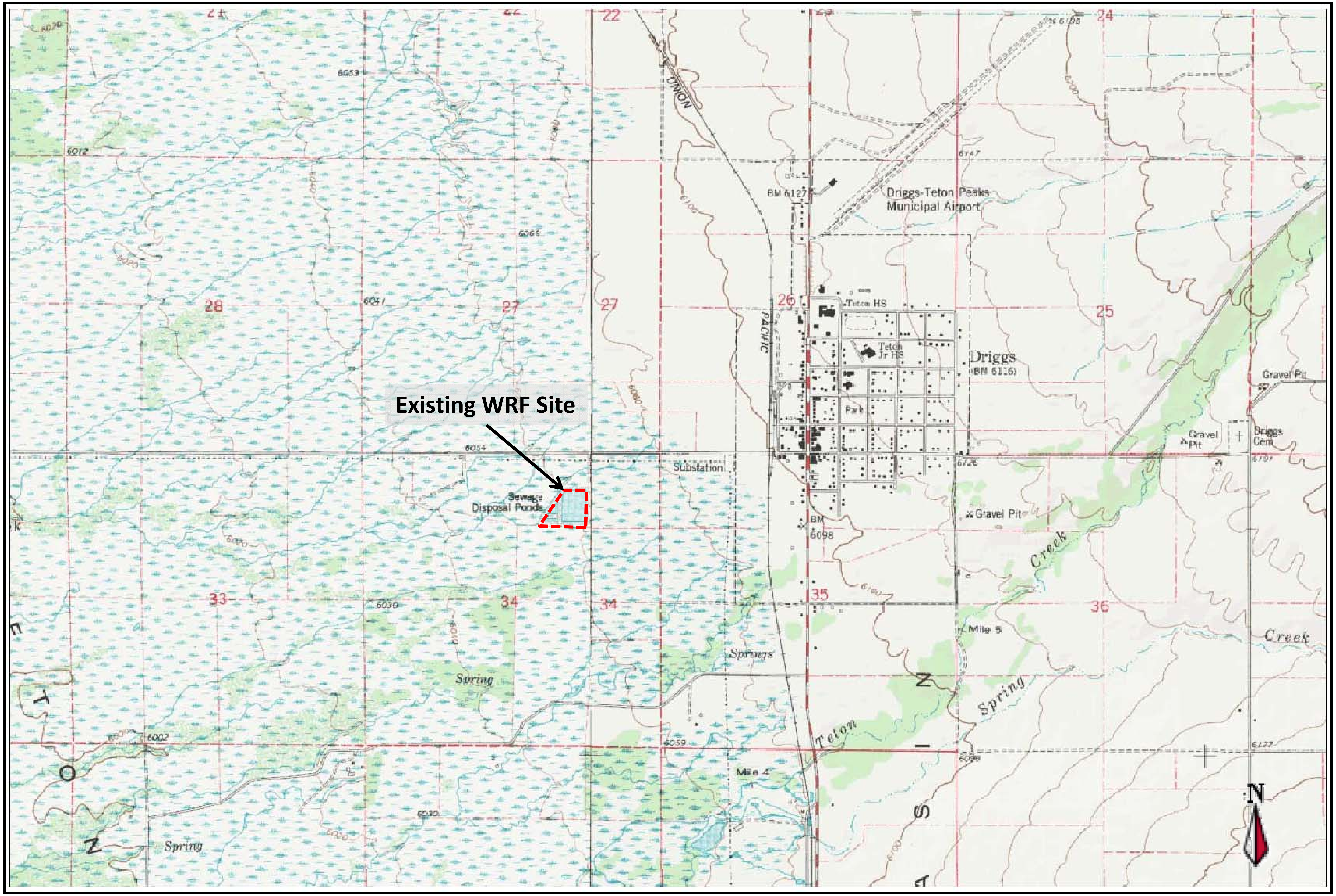


Figure 7-1:
Topographic map showing locating of existing WRF Site, Teton County, Idaho.

T05, R45E, Section 34
Bates NE & Driggs NW, Idaho Quadrangles

Approximate Scale: 1" = 4,000 ft

local irrigation activities. Peak groundwater levels occur in late May through early July, which coincide with peaks in the plant influent, indicating infiltration into the system during periods of high groundwater levels. Groundwater depth at the WRF site may be as shallow as 4-5 feet (Nelson, 2006).

The Teton Basin is part of the Intermountain Seismic Belt (Nelson, 2006). Active faults as identified in the USGS Quaternary Fault and Fold Database include the Teton and Grand Valley faults (Nelson, 2006). Both of these faults are capable of producing major earthquakes (Magnitude $\geq$ 6.0). Ground acceleration or "shake maps" of the existing site show a 10% probability of ground acceleration of 0.16g and 2% probably of ground acceleration in excess of 0.32g in the next 50 years (Nelson, 2006). Additionally, higher groundwater levels or localized saturated zones indicate the WRF site may be susceptible to liquefaction during a severe earthquake. These geologic hazards exist for the entire surrounding area and are not unique to the specific WRF site. The existing WRF site is located at T05N, R45E, Section 34 NW/4 NE/4 at an elevation of roughly 6,070 feet above sea level. The WRF is located 0.75 miles west of Idaho Highway 33 in Teton County, Idaho (Nelson, 2006).

Typical soils at the actual treatment site are alluvial fan type deposits with small to large cobbles dominating; much of this material was transported in as fill during construction of the original WRF. The Teton Area Idaho-Wyoming Soil Survey has documented two soil mapping units present within the general vicinity of the project area. Correspondence with the local (Driggs) branch of the USDA was contacted to confirm the soil types (see EID Appendix). The two soil types reported by the USDA are Tepete Peat shallow and Zohner silty clay loam, both of which are listed on the National Hydric Soils list, however neither is listed as prime, unique, or of statewide importance. Tepete Peat shallow soils are poorly drained, organic soils formed in marshes and other regional low lying wetland areas. These soils occur in wetlands or seasonally wetland areas where slopes are typically <1%. Permeability is rapid in upper peat portions and moderately slow in the underlying mineral portions of the profile. Zohner silty clay loam soils are poorly drained soils formed in mixed alluvium deposits. These soils occur on wet bottom areas where slopes are <1%. Permeability is moderately slow in the silty clay loam horizons and very rapid in the underlying gravels (Nelson, 2006).

In summary, no adverse site conditions or effects have been noted at the existing WRF site. As all of the proposed upgrades will be located on the existing WRF site, no new hazards or issues are anticipated.

7.4.2 Climate

According to the Idaho Community Profile, the local climate is characterized by cold winters with average minimum daily low temperatures at 6°F in January and mild summers with average daily high temperatures of 82°F in July Average annual precipitation averages 15.9 inches, with June typically the wettest month and November the driest. Average annual snowfall is 73.7 inches. Prevailing winds are from the southwest and have a mean velocity of 10-15 miles per hour (mph) with gusts ranging from 25 to 45 mph. Proposed structures and treatment processes will be designed for appropriate climate conditions where applicable.

No unusual issues with climate or other meteorological constraints that will affect air quality or the feasibility of this upgrade have been noted. All upgrades will be located within the existing WRF site and will have no negative long-term impact on air quality or the surrounding environment.

7.4.3 Population

Annual growth rate estimates in previous reports have been as high as 10%. However, review of growth data and influent flow data to the WRF show that growth has been relatively slow over the past few years. Further analysis shows that a growth rate of 2-4% is a more realistic long term number and agrees with other figures produced by the State of Idaho. Assuming a growth rate of 4% over the next 20 years, the WRF will require 0.9 MGD average daily capacity. Figure 2-10 shows the projected population growth of the service area (page 25). As discussed in Chapter 5, the proposed upgrade initially expands the WRF to handle 0.9 MGD average daily flow. The upgrade design accounts for a peak hour factor of 2.0 times the average daily flow, and an additional 200,000 gpd from summer infiltration, yielding a peak hour capacity of up to 2.0 MGD. The process is easily expandable to 1.35 MGD average daily flow as growth merits. Population growth of the service area is discussed in Section 2.2 (page 21). Proposed 20-year design criteria for the upgrade are summarized in Table 3-1 (page 33).

7.4.4 Economic and Social Profile

The existing population of the service area is detailed in Section 2.2. According to the 2000 Census, the median annual household income for Driggs is $33,750, below the State average of $37,572. Victor's reported median annual income is $42,500, with unincorporated areas of both cities in Teton County reporting $41,900.

Section 6.3.5 discusses the sewer budget based on a $2 million dollar contribution from Driggs and Victor (combined) and private loans to fund the remaining $6.6 million. This budget indicates that the sewer district would need to collect an average of $60.27 per month per ERC (equivalent to a typically single family residence). This rate would be higher than is typical for a small rural community and significantly higher than the current base user fees in Victor and Driggs. Section 6.3.2 discusses the current user rate structure of both cities in more detail.

The upgrade will help encourage continued growth in the area and will benefit both communities in terms of public health service and capacity for residential and commercial expansion. All proposed upgrades will be located within the existing WRF site and will not adversely affect land values of any surrounding area. The existing site is surrounded by undeveloped seasonal wetlands and no development is anticipated in this area. The site is about one mile from the nearest residential or commercial area and no issues with odors, noise, or other problems have been noted from the existing WRF. Thus, as all of the new structures will be located on the existing site, no problems related to land value or aesthetics are expected.

7.4.5 Land Use

As previously stated, all upgrades proposed in this report will be located on the existing WRF site (Figure 7-2). The two smaller treatment cells will be backfilled and available for construction of new process buildings and basins. Therefore, this proposal will not adversely impact the area surrounding the site anymore than the existing facilities. The WRF site is far removed from any

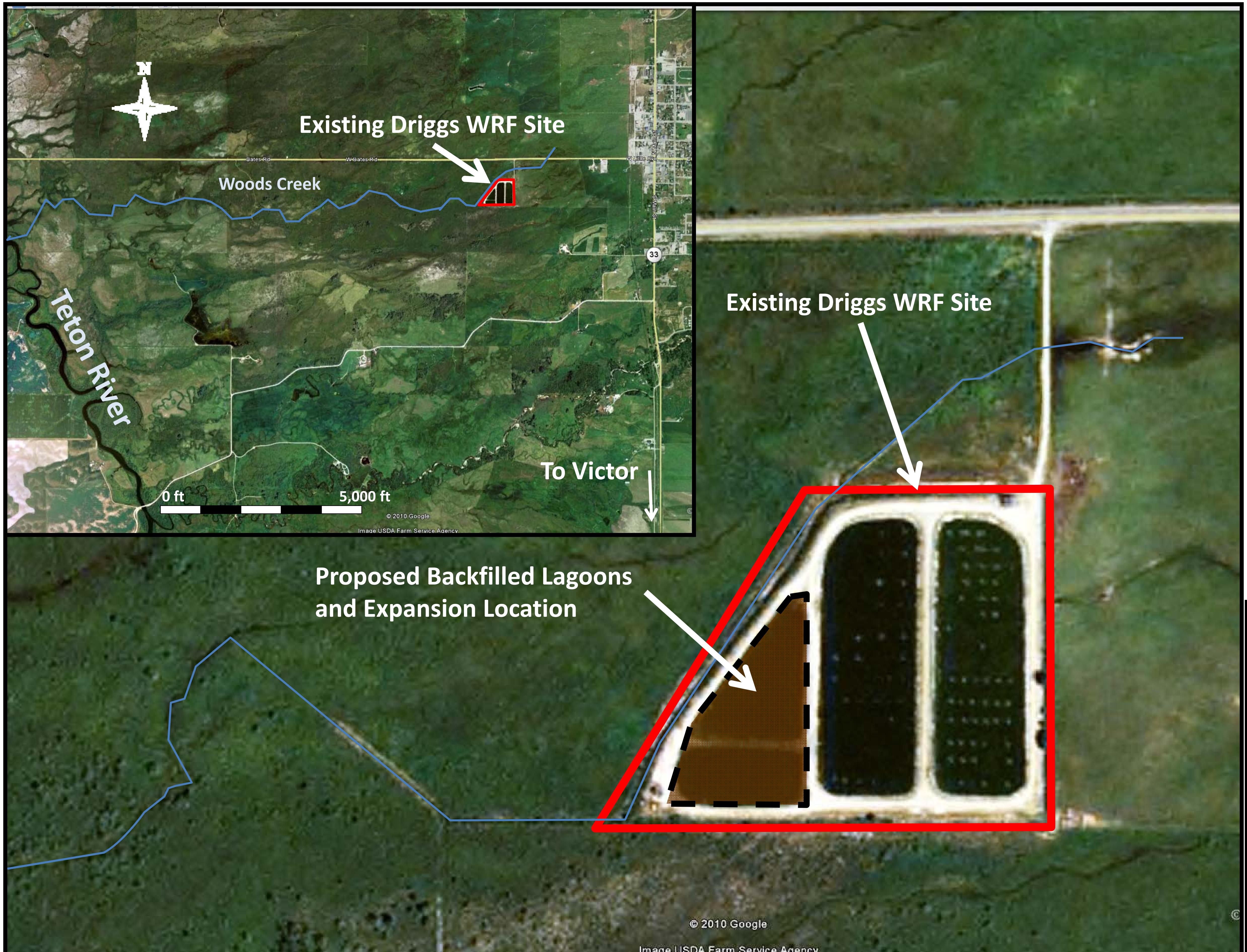


Figure 7-2
Aerial photograph showing location of existing WRF site and nearby hydrologic features. All proposed upgrades will be located within the existing site (red boundary) by backfilling the two smaller western waste lagoons (brown shaded area).

Images from USDA Farm Service Agency and 2010 Google Earth®

residential or commercial areas, and no issues or complaints with regards to noise, odors, etc… from the existing facility have been reported.

The upgraded WRF will allow for additional sewage treatment capacity. Nonetheless, many other factors determine the practicality and impacts of residential and commercial developments in the area besides the WRF's capacity. Many locations have already been set aside and approved for additional housing and construction. Upgrading the WRF is not anticipated to significantly increase or decrease the rate and location of development in the service area. Note that upgrades are needed to meet permit even with present hydraulic and biologic loads received by the WRF, regardless of any future expansion. Correspondence with various State and Federal agencies (see EID Appendix) indicated no concern regarding this project's impact on the surrounding land and environment.

7.4.6 Flood Plain

The project area and existing WRF are located along the eastern boundary of the Teton River 100-year floodplain (Nelson, 2006) according to the Teton County Flood Map (see EID Appendix). FIRM or Flood Insurance Rate Maps are available for the project area, but the specific flood plain elevations are not provided for the WRF site. Topographic maps of the area indicate that the WRF is located roughly 70' above the normal elevation of the Teton River, and 5-8 above the native topography surrounding the site. The existing WRF site has been built up 5-8 feet above the natural topography of the area. Thus, assuming the native topography surrounding the site represents the 100 year flood plain (per the Teton County Flood Map) the WRF site should be at least 5 feet above the 100-year flood plain. However, as no detailed FIRM floodway mapping is available, no specific base flood elevations have been determined for the site. The upgrades proposed in this expansion will not impact the existing flood plain or relative site elevation of the WRF as it currently stands.

7.4.7 Wetlands

The existing WRF site appears to be surrounded by an extensive wetland complex associated with the upper Teton River located primarily east of the river and west/north-west of Highway 33 (Nelson, 2006). A preliminary wetland determination within the project area was conducted based on a review of the U.S. Fish and Wildlife Service's National Wetland Inventory (NWI) mapping. NWI mapping indicates that the entire area surrounding the WRF (excluding the site and treatment lagoons) is part of a larger seasonally flooded palustrine emergent wetland (Figure 7-3).

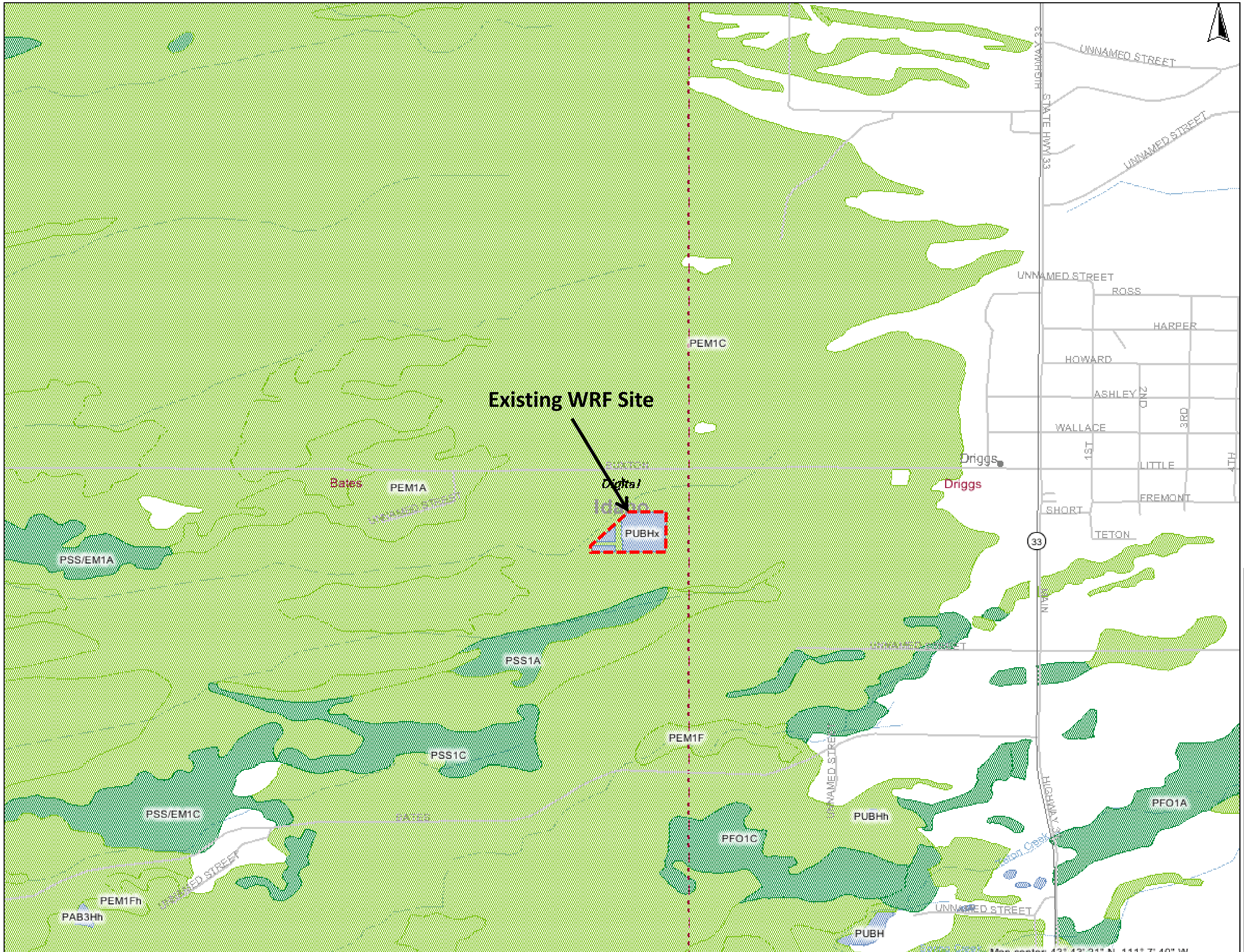
This was a factor in developing an upgrade that would not encroach or impact the surrounding wetland area. As all upgrades will be located on the existing WRF site and lagoons, the project will not have any adverse effects on the surrounding environment. The proposed upgrade will improve effluent quality that is discharged to this area (namely ammonia removal) and may even aid in creating or sustaining additional wetland areas utilizing effluent from the WRF. Correspondence with the Idaho Department of Fish and Game stated that as long as all activity takes place within the existing site boundary, no additional studies or investigations are required. However, if any upgrades were to expand beyond the existing site, they recommend hiring a qualified wetland delineation consultant. The letter is provided in the EID Appendix.

7.4.8 Wild and Scenic Rivers

Neither the Teton River nor Woods Creek that ultimately receive waters from the WRF are designated as wild and scenic according to the National Wild and Scenic Rivers System database last queried in February 2010. However, the Teton River is noted for fishing, rafting, and other recreational activities. This and the proximity of the WRF to the seasonal wetlands have contributed to the new effluent ammonia limit. The proposed upgrade will improve effluent water quality and help protect these environments and recreational assets.

7.4.9 Cultural Resources

A Class I Cultural Resource Record Search was conducted for the project area (T5NR45E, Section 34) by the Cultural Records of the Idaho State Historic Preservation Office (SHPO) in August of 2006. The reference number for the record search is 2006-194. The search found that no cultural resource inventories had been conducted and no previously recorded cultural properties exist within the Area of Potential Effect (APE). Again, as all proposed upgrades are to be located on the existing WRF site, no impacts to any surrounding land or resources are anticipated. A summary of the report from the SHPO is provided in the EID Appendix. SHPO was contacted



LEGEND

- Freshwater Emergent Seasonal Wetland
- Freshwater Forested/Shrub Wetland
- Manmade (Wastewater) Pond
- Not Determined

Figure 7-3:
National Wetland Inventory (NWI)
map of the WRF site and surrounding area.
all proposed upgrades will take place within the
existing site boundary.

again in February 2010 and confirmed that the status of the site had not changed. The 2010 correspondence is also provided in the EID Appendix.

7.4.10 Flora and Fauna

The U.S. Fish and Wildlife Service was contacted regarding this upgrade project. Their response provided a list of endangered species of which to be aware during the construction and development process. As none of the species listed (File # 2010-Sl-0247) are known to occupy the existing WRF site, no conflicts with the Endangered Species Act of 1973 are anticipated. The response letter is provided in the EID Appendix. The list of endangered species identified 5 species associated with this area and are provided in Table 7-2.

Table 7-2: List of local endangered species

Listed Species	Federal Status	Expected Occurrence
Grey wolf (Canis lupus)	Experimental/Non-essential; Threatened north of I-90	Resident
Canada lynx (Lynx Canadensis)	Threatened	Resident
Grizzly Bear (Ursus arctos)	Threatened	Resident
Bald Eagle (Haliaeetus leucocephalus)	Threatened	Resident
Yellow-billed Cuckoo (Coccyzus americanus)	Candidate	Nesting; Migrant

None of the above mentioned species are expected to inhabit the WRF site and will have minimal if any presence in the surrounding area.

7.4.11 Recreation and Open Space

No negative impacts on existing or proposed recreational and open space are expected as all upgrades will be contained within the existing WRF site. Proposed upgrades will have a positive impact on the surrounding wetlands and waterways as they will provide better quality effluent from the WRF.

7.4.12 Agricultural Lands

Land cover immediately surrounding the WRF site consists of scrub-shrub wetlands and disturbed areas. Scrub-shrub wetlands are dominated by shrubby cinquefoil and willow along with grasses such as spreading bentgrass in the herbaceous stratum. Disturbed areas are dominated by weeds such as Canadian thistle and introduced grasses. No prime and or unique farmlands occur within or near the WRF site and the project will not adversely affect local agricultural capacity or future long-term agricultural practices. The local (Driggs) branch of the USDA was contacted; their response is provided in the EID Appendix.

7.4.13 Air Quality

The Statewide Air Quality Planning Map indicates that the region is not classified as a Non-Attainment Area, a Class I Area, or an Area of Concern. Teton Basin is a high-elevation valley surrounded by mountains and is susceptible to air quality problems associated with temperature inversions. During periods of high atmospheric pressure, dense cold air is trapped near the valley floor by upper layers of warmer air. Ambient air quality may decline as a result of pollutants trapped in the lower atmosphere during inversions. This pattern may persist for several days at a time but pollutant concentrations are dispersed by weather changes, especially when accompanied with winds.

Ambient Air quality within the existing WRF site and surrounding area is considered very good with very low concentrations of pollutants throughout the year. After contacting the Idaho Department of Environmental Quality, the only impact to air quality associated with the proposed upgrades is dust from heavy equipment during construction. Dust may become airborne from heavy equipment used to backfill, excavate, and aid in construction new buildings and basins. Several methods are available to control dust, including watering, matting, binders, and other techniques. The use of dust suppression techniques should be employed based on the current conditions and requirements of the site during construction. The Idaho DEQ statements are provided in the EID Appendix. The site is well removed from any residential or commercial interests, so temporary interference due to dust and construction will be minimal. The upgraded plant will not produce any additional concerns with regards to air quality, noise, or odors, beyond what is already present at the site.

7.4.14 Energy

Energy usage will increase slightly, due mainly to the addition of pumps, screens, blowers, and UV disinfection equipment. However, the overall energy consumption per gallon of water treated will be reduced as the proposed technology is more energy efficient. In addition, space is available at the existing WRF site to install solar panels. These solar panels will provide energy to power or at least supplement the UV disinfection equipment and possibly other onsite pumps. The feasibility of installing the solar panels has not been fully explored, and additional cost/energy analysis is needed. However, the City of Driggs has received preliminary approval for a $220,000 grant to install solar panels at the WRF site. Details of this layout including the solar panels are discussed in Section 5.1 of this document (page 42).

7.4.15 Regionalization

Currently, the City of Driggs owns and operates the existing WRF. Through an existing agreement between Victor and Driggs, Victor pays a portion of the O&M costs associated with running the WRF proportional to their portion of the total influent flow into the WRF. The existing agreement does provide language allowing both cities to work together to fund and operate on a co-ownership basis any future facilities or upgrades. A revised agreement between the two cities concerning this upgrade has not been finalized, but negotiations are in the preliminary stages. At this point, both cities support this proposal and are ready to proceed with finalizing a new cost-sharing/rate structure agreement. It is anticipated that both cities will become co-owners of the upgraded WRF, though to what extent has yet to be determined. Some preliminary user and connection fee rates have been explored in Chapter 6 of this document, but the numbers presented are preliminary as grant monies and other outside funding sources have yet to be finalized.

Ultimately, the intent is to either slightly modify the existing agreement or to form a cooperative Teton Valley Regional Wastewater District with representatives from both Driggs and Victor serving on the district. The district would handle the sewer budget and operations/maintenance of the WRF, with funding from connection and user fees from both cities. Each City would be responsible for their respective collection system, and each city's contribution to the WRF and regional district would likely be based on their proportional contribution to the total influent to the

WRF. Again, both cities support this proposal and the formation of a regional wastewater district. Details of this agreement will depend on funding and future meetings between the cities.

7.5 Maps, Charts, and Tables

Applicable maps, charts, and tables are referenced and provided within the main text of this EID chapter or in the EID Appendix.

7.6 Environmental Impacts of Proposed Project

Several environmental agencies were contacted to review the proposed upgrade. All agencies responding to the upgrade indicated that it would have no impact or only a positive impact on the local environment. The only impacts noted in all responses from government agencies concerned dust abatement and construction debris disposal during the construction process; no long-term negative impacts were noted. Response letters are included in the EID Appendix. Agencies that did not respond via letter were contacted by phone. Responses from these agencies are as follows:

- A phone conversation with Patrick Brown of the Idaho Department of Land indicated that they did not have any comments or concerns with the proposed project and that they would not require formal written correspondence or notice for the project.
- After sending written correspondence on March 4, 2010, no comments were received from Region 10 of the EPA.
- After sending written correspondence on March 4, 2010, no comments were received from the Idaho Department of Water Resources.
- After sending written correspondence on March 4, 2010, no comments were received from the Shoshone – Bannock, Shoshone-Paiute, and Shoshone - Northwestern Bands cultural resource programs.

7.7 Means to Mitigate Adverse Environmental Impacts

The proposed upgrade project will have little if any environmental impacts. As discussed in Section 7.6, the only concerns noted were during construction, namely dust abatement and proper disposal of construction debris and waste. Otherwise, there are no adverse effects projected and mitigation is not necessary.

7.8 Public Participation

No official public meetings or reviews have been held at this time. However, once the cities of Victor and Driggs have established a preliminary proposal for an updated intercity agreement concerning the WRF, public review and opinion on the proposed upgrade and new regional sewer district will be received. Per DEQ recommendations, the public will be given at least 21 days to review the project, and all appropriate public meetings and hearings will be conducted. Any relevant comments or items of concern received during this period will be considered and incorporated as appropriate. Comments that result in changes to this proposed project will be provided in future correspondence as an addendum to the EID provided here.

7.9 References Consulted

The information provided in this EID was mostly reviewed and consolidated as part of the PER Addendum. Some information, including site location and some of the upgrade alternatives discussed were developed and provided in the 2006 Preliminary Engineering Report provided by Nelson Engineering.

7.10 Agencies Consulted

The following references and agencies were consulted in preparation of this EID document:

Name	Representing	Address	City	State	Zip	Phone
James Joyner	US Army Corps of Engineers	900 N. Skyline Dr., Suite A	Idaho Falls	ID	83402	208-522-1645
Ty Matthews	US Fish and Wildlife Service	4425 Burley Dr., Suite A	Chubbuck	ID	83202	208-237-6975
Rensay Owen	Department of Environmental Quality - Air Quality	900 N. Skyline Dr., Suite B	Idaho Falls	ID	83402	208-528-2650
Troy Saffle	Department of Environmental Quality - Surface Water	900 N. Skyline Dr., Suite B	Idaho Falls	ID	83402	208-528-2650
Mike Lidgard	EPA Region 10	1200 6th Ave OW-130	Seattle	WA	98101	206-553-1755
Lindsay Markegard	USDA-NRCS Driggs	PO Box 87	Driggs	ID	83201	208-654-2680
Dennis Dunn, Senior Water Resource Analyst	Idaho Dept. of Water Resources	900 N. Skyline, Suite A	Idaho Falls	ID	83402	208-525-7161
Steve Schmidt	Idaho Dept. of Fish and Game, SE Region	4279 Commerce Circle	Idaho Falls	ID	83401	208-525-7290
Gary Bahr	Idaho Department of Agriculture	P.O. Box 790	Boise	ID	83701	208-332-8500
Steve Pew, Environmental Health Director	Southeast District Health Department	1901 Alvin Ricken Drive	Pocatello	ID	83201	208-233-9080
Karen Hiatt	Idaho Transportation Dept., District 6	P.O. Box 97	Rigby	ID	83442	208-745-7781 or 208-745-5600
Patrick Brown	Department of Land	3563 Ririe Hwy	Idaho Falls	ID	83401	208-525-7167
Suzi Pengilly, Deputy SHPO	Idaho State Historical Society	210 Main Street	Boise	ID	83702	208-334-3847 ex. 107
Carolyn Boyer Smith, Cultural Resources Coordinator	Shoshone-Bannock Tribes	P.O. Box 306	Fort Hall	ID	83203	208-478-3707
Ted Howard, Cultural Resources Program	Shoshone-Paiute Tribe	PO Box 219	Owyhee	NV	89832	775-757-3161 ext 243 or 208-759-3100
Patti Timbimboo, Cultural Resource Officer	Northwestern Band, Shoshone	707 North Main Street	Brigham City	UT	84302	435-734-2286 Ext 13

Responses from these references are provided in the EID Appendix. Responses include letters and emails from the agencies. A sample of the letter and information that was sent to each agency/reference is also provided in the EID Appendix.

7.11 Mailing List

See Section 7.9

EID APPENDIX

FEMA – FIRM Flood Zone Map

STATE OF IDAHO

DEPARTMENT OF AGRICULTURE
DIVISION OF AGRICULTURAL RESOURCES

C.L. "BUTCH" OTTER
Governor
CELIA R. GOULD
Director

CONFIDENTIAL FAX TRANSMISSION

Date: 3/18/10

To: L. Scott Rogers

Telephone Number: 208-332-8597 Fax Number: 208-334-3547

From: Gary Bahr

Telephone Number: ________ Fax Number: 334-3547

Number of pages in transmission, including cover page: 2

THIS FAX WAS TRANSMITTED FROM THE IDAHO STATE DEPARTMENT OF AGRICULTURE. IF YOU DID NOT RECEIVE THE NUMBER OF PAGES LISTED ABOVE, OR HAVE ADDITIONAL QUESTIONS, PLEASE CALL THE TELEPHONE NUMBER LISTED ABOVE.

Comments:

2270 Old Penitentiary Road • P.O. Box 790 • Boise, Idaho 83701 • (208) 332-8605 • Fax (208) 334-3547 • www.agri.idaho.gov

STATE OF IDAHO

DEPARTMENT OF AGRICULTURE

C.L. "BUTCH" OTTER
Governor
CELIA R. GOULD
Director

March 18, 2010

L. Scott Rogers, P.E.
533 W. 2600 S. Suite 275
Bountiful, Utah
84010

Dear Mr. Rogers:

Thank you for inquiring with the Idaho State Department of Agriculture (ISDA) with regards to your work with the Teton Valley Water Reclamation Facility. The improvement work being proposed will be an important public works projects for the citizens of Driggs and Victor.

We have reviewed the environmental documents provided to us. Your documents appear to be professional and complete. At this time we do not have comments or questions related to these projects.

Thank you for contacting our agency. Feel free to contact us in the future (main number - 208-332-8500, my number - 208-332-8597).

Sincerely,

Gary Bahr

Gary Bahr

Water Quality Programs

PC: Water Program File

IDAHO DEPARTMENT OF FISH AND GAME
UPPER SNAKE REGION
4279 Commerce Circle
Idaho Falls, Idaho 83401

C.L. "Butch" Otter / Governor
Cal Groen / Director

March 16, 2010

L. Scott Rogers, PE.
Aqua Engineering
533 W 2600 S Suite 275
Bountiful, UT 84010

RE: Proposed upgrade to the Teton Valley Water Reclamation Facility.

Dear Tom:

Idaho Department of Fish and Game (Department) has reviewed the above referenced letter dated March 4, 2010. Our interest in the project is to protect naturally functioning wetland systems and fish and wildlife resources associated with these systems.

The Department is familiar with Woods Creek and the Woods Creek Fen system which is a tributary to the Teton River. The proposal you provided is a bit unclear to us, because one figure seems to contradict your text.

The Department is unaware of any impacts the project will create if developed as described and if completed entirely within the existing WRF site as provided in Figure 1 (color photograph). However, if the project is intended to use an existing wetland as shown in Figure 2A, the Department has concerns over the potential destruction of a wetland.

Figure 2A shows a "New Process Area" rectangle which extends into an area marked with wetland symbols. Knowing the Woods Creek area, we suspect acreage inside this rectangle may currently be a wetland. As such, we suggest you hire a qualified wetland delineation consultant, and provide proof the project will not extend onto existing wetland. We recommend you provide this wetland delineation report to the permitting authorities.

If you have questions, please contact our Environmental Staff Biologist, Gary Vecellio, at 208-525-7290.

Sincerely,

Steve Schmidt
Regional Supervisor

SLS:gmv:jms

cc: Directors Office-Boise
James Joyner, USACOE
Bassista, IWR

Eric Sahm

From: Rensay.Owen@deq.idaho.gov
Sent: Tuesday, March 09, 2010 11:24 AM
To: erics@aquaeng.com
Subject: RE: Driggs - Teton Valley Water Reclamation Facility Upgrade

Mr. Sahm,

I have reviewed the documentation you provided concerning a *"Proposed Upgrade to the Teton Valley Water Reclamation Facility"* with regard air quality impacts to the local area. Construction projects of this nature have the potential to develop problems with fugitive dust. Please ensure the project activities comply with the rules provided below:

IDAHO ADMINISTRATIVE CODE IDAPA 58.01.01 Department of Environmental Quality Rules for the Control of Air Pollution in Idaho Page 174 IAC 2009

650.RULES FOR CONTROL OF FUGITIVE DUST.
The purpose of Sections 650 through 651 is to require that all reasonable precautions be taken to prevent the generation of fugitive dust. (5-1-94)

651.GENERAL RULES.
All reasonable precautions shall be taken to prevent particulate matter from becoming airborne. In determining what is reasonable, consideration will be given to factors such as the proximity of dust emitting operations to human habitations and/or activities, the proximity to mandatory Class I Federal Areas and atmospheric conditions which might affect the movement of particulate matter. Some of the reasonable precautions may include, but are not limited to, the following: (3-30-07)

01. Use of Water or Chemicals. Use, where practical, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of land. (5-1-94)
02. Application of Dust Suppressants. Application, where practical, of asphalt, oil, water or suitable chemicals to, or covering of dirt roads, material stockpiles, and other surfaces which can create dust. (5-1-94)
03. Use of Control Equipment. Installation and use, where practical, of hoods, fans and fabric filters or equivalent systems to enclose and vent the handling of dusty materials. Adequate containment methods should be employed during sandblasting or other operations. (5-1-94)
04. Covering of Trucks. Covering, when practical, open bodied trucks transporting materials likely to give rise to airborne dusts. (5-1-94)
05. Paving. Paving of roadways and their maintenance in a clean condition, where practical. (5-1-94)
06. Removal of Materials. Prompt removal of earth or other stored material from streets, where practical. (5-1-94)

If you have any further questions regarding air quality impacts please contact me through any of the means listed below.

Rensay

Eric Sahm

From: Troy.Saffle@deq.idaho.gov
Sent: Monday, March 22, 2010 7:55 AM
To: erics@aquaeng.com
Cc: William.Teuscher@deq.idaho.gov
Subject: RE:

Eric:

I reviewed the materials sent and have no significant environmental concerns for the upgrade of the Driggs facility. I would bring to your attention that Woods Creek appears on Idaho's Impaired Waterbodies list and may warrant special consideration during construction activities.

I copied Willie Teuscher for the file.

Please do not hesitate to contact me with further questions or concerns. Thanks

Troy Saffle
Regional Water Quality Manager
Idaho Department of Environmental Quality
900 N. Skyline, Suite B
Idaho Falls, Idaho 83402
208.528.2650
208.521.5913 (c)

From: Eric Sahm [mailto:erics@aquaeng.com]
Sent: Thursday, March 04, 2010 4:46 PM
To: Troy Saffle
Subject:

Mr. Saffle,

Attached is the summary and relevant figures regarding the proposed upgrades to the wastewater treatment plant in Driggs Idaho. Please feel free to contact me if you have any questions or if you have difficulty opening the attachment. I have also emailed this document to Mr. Rensay Owen. Thank you again,

Eric Sahm, E.I.T.
erics@aquaeng.com
Phone: (801) 299-1327
Fax: (801) 299-0153
Cell: (801) 232-1020
AQUA ENGINEERING, INC.
533 W. 2600 S. Suite 275
Bountiful, UT 84010

IDAHO TRANSPORTATION DEPARTMENT
P.O. Box 97
Rigby, ID 83442-0097

(208) 745-7781
itd.idaho.gov

April 2, 2010

L. Scott Rogers, P.E.
Aqua Engineering, Inc.
533 W 2600 S. Suite 275
Bountiful, UT 84010

RE: Comments on Proposed Upgrade to Teton Valley Water Reclamation Facility

Dear Mr. Rogers:

ITD has reviewed the proposal for upgrades to the Teton Valley Water Reclamation Facility and we have no comments.

Sincerely,

Karen Hiatt

Karen Hiatt, P.E.
Assistant District 6 Engineer

EASTERN IDAHO
Public Health
DISTRICT

ENVIRONMENTAL HEALTH DIVISION

1250 Hollipark Drive
Idaho Falls, Idaho 83401
208.523.5382
fax 208.528.0857
www.idaho.gov/phd7

Promoting the Health of People & Their Environment

March 15, 2010

L. Scott Rogers
Aqua Engineering, Inc.
533 West 2600 South
Suite 275
Bountiful, UT 84010

RE: ENVIRONMENTAL PROJECT REVIEW

Dear Mr. Rogers:

This letter is in regards to your March 4, 2010, Environmental Review letter for the Cities of Driggs and Victor, Idaho. Our response is declared below.

This Department does not have any direct environmental concerns about the project. We would like to emphasis though that disposal of any construction debris generated from the project should be at an approved solid waste facility.

Thank you for the opportunity to respond. Please call if you have questions. The number is (208) 523-5382.

Sincerely,

Kellye Eager
Environmental Health Director

CC: Michael Dronen, EIPHD- Driggs Office

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C.L. "Butch" Otter
Governor of Idaho

Janet L. Gallimore
Executive Director

Administration
2205 Old Penitentiary Road
Boise, Idaho 83712-8250
Office: (208) 334-2682
Fax: (208) 334-2774

Membership and Fund Development
2205 Old Penitentiary Road
Boise, Idaho 83712-8250
Office: (208) 514-2310
Fax: (208) 334-2774

Archaeological Survey of Idaho
210 Main Street
Boise, Idaho 83702-7264
Office: (208) 334-3847
Fax: (208) 334-2775

Historical Museum and Education Programs
610 North Julia Davis Drive
Boise, Idaho 83702-7695
Office: (208) 334-2120
Fax: (208) 334-4059

Historic Preservation Office
210 Main Street
Boise, Idaho 83702-7264
Office: (208) 334-3861
Fax: (208) 334-2775

Old Penitentiary and Historic Sites
2445 Old Penitentiary Road
Boise, Idaho 83712-8254
Office: (208) 334-2844
Fax: (208) 334-3225
Statewide Sites
- Franklin Historic Site
- Pierce Courthouse
- Rock Creek Station & Stricker Homesite

Public Archives and Research Library
2205 Old Penitentiary Road
Boise, Idaho 83712-8250
Office: (208) 334-3356
Fax: (208) 334-3198
- Public Archives
- Research Library
- Oral History

North Idaho Office
112 W. Fourth Street, Suite 7
Moscow, ID 83843
Office: (208) 882-1540
Fax: (208) 882-1763

DATE: April 2, 2010
TO: L. Scott Rogers, Aqua Engineering, Inc., Bountiful, Utah.
FEDERAL AGENCY: EPA
PROJECT NAME: Improvements, Teton Valley Water Reclamation Facility

Section 106 Evaluation

	The field work and documentation presented in this report meet the Secretary of the Interior's Standards.
	No additional investigations are recommended; project can proceed as planned.
	Additional information is required to complete the project review. (See comments.)
X	Additional investigations are recommended. (See comments.)

Identification of Historic Properties (36 CFR 800.4):

	No historic properties were identified within the project area.
	Property is not eligible. Reason:
	Property is listed in National Register of Historic Places.
	Property is eligible for listing in the National Register of Historic Places. Criterion: _A _B _C _D Context for evaluation:
X	*No historic properties* will be affected within project area.

Assessment of Adverse Effects (36 CFR 800.5):

	Project will have *no adverse effect* on historic properties.
	Project will have an *adverse effect* on historic properties; further consultation is recommended.

Comments:

Thank you requesting our office's comments while in the planning stages of the project and prior to construction. You have informed this office that work associated with this project will be confined to the existing facility, lift station and existing trunkline corridors. As with any ground disturbing activities, there is a potential to unearth archaeological remains. Should any archaeological remains be discovered during the project activities, all work must halt immediately in the area of discovery and our office contacted. If I can answer any questions or be of further assistance, please contact me at (208) 334-3847 ext. 107 or Shelby Day at ext. 109.

Suzi Pengilly

Suzi Pengilly
Compliance Coordinator and Deputy SHPO
State Historic Preservation Office

4/2/2010
Date

DEPARTMENT OF THE ARMY
WALLA WALLA DISTRICT, CORPS OF ENGINEERS

REPLY TO ATTENTION OF:

March 24, 2010

Regulatory Division

SUBJECT: NWW-2010-00108

Mr. L. Scott Rogers P.E.
533 West 2600 South
Suite 275
Bountiful, Utah 84010

Mr. Rogers:

This is in response to your March 4, 2010 letter requesting our comments on your Proposed Teton Valley Water Reclamation Facility Upgrade. (Section 404 of the Clean Water Act (33 U.S.C. 1344) requires a Department of the Army permit be obtained for the discharge of dredged or fill material into waters of the United States. This includes most perennial and intermittent rivers and streams, natural and man-made lakes and ponds, and wetlands, as well as irrigation and drainage canals and ditches that are tributaries to other waters. / Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) requires that a Department of the Army permit be obtained for any structures or work in or affecting navigable waters of the United States.) The Teton River is a(navigable) water regulated under (Section 10 and 404). Activities regulated under Section 404 include excavation and mechanized land clearing activities which result in the discharge of dredged material and destroy or degrade waters of the United States.

Based on the information provided, it appears the proposed project will not involve work in areas subject to our jurisdiction and a Department of the Army permit will not be required. However, any expansion of the facility may require authorization from the Army Corps of Engineers. If you have any questions concerning these regulatory matters, please contact me at 208-522-1645.

Sincerely,

Irvin T. Joy
Regulatory Project Manager

Enclosures

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Eastern Idaho Field Office
4425 Burley Dr., Suite A
Chubbuck, Idaho 83202
Telephone (208) 237-6975
http://www.fws.gov/idahoes/

MAR 22 2010

L. Scott Rogers, P.E.
AQUA Engineering, Inc.
533 W. 2600 S., Suite 275
Bountiful, UT 84010

Subject: Proposed Upgrade to the Teton Valley Water Reclamation Facility in Teton County, Idaho. File # 2010-SL-0247

Dear Mr. Rogers:

The Fish and Wildlife Service (Service) is replying to your request sent on March 4, 2010 and received on March 8, 2010, for our determination on any negative or adverse impacts your project may have on the area of interest. We interpreted this as a request to provide you with a list of endangered, threatened, proposed, and/or candidate species, and designated critical habitat which may be affected by the proposed upgrade to the Teton Valley water reclamation facility in Teton County, Idaho. Please refer to the species list (SL) number shown above in all correspondence and reports.

The Endangered Species Act of 1973, as amended (Act) includes provisions for the conservation of listed species on both Federal and non-Federal lands. A private landowner may wish to enter into an agreement with the Service under section 10 of the Act for activities that benefit listed, proposed, and candidate species. Voluntary agreements such as Safe Harbor Agreements or Candidate Conservation Agreements contribute to the conservation of listed, proposed, or candidate species while allowing for management activities on non-Federal lands. In addition, Section 9 of the Act prohibits the "taking" of any listed species without an exemption (issued by the Service) for that take[1]. For private landowners, that exemption is developed through the permit process of Section 10 (through a Habitat Conservation Plan) of the Act. More information on the various mechanisms for take exemption available to private landowners under the Act can be found at http://www.fws.gov/idaho/Landowners.htm.

1 Take of threatened or endangered animal species is defined as; harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
150 Front St, PO Box 87
Driggs, ID 83422
Phone: 208-354-2680
Fax: 208-354-2683

FAX

To: L. Scott Rogers	From: Lindsay Markegard
Company: Aqua Eng	Date: 3/26/10
Phone Number:	Pages: Cover + 3
Fax Number: 801 299 0153	

Message: Comments regarding Teton Valley Water Rec. Project

please contact me w/ ?'s

thanks,
Lindsay

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
275 Old Railroad Way, PO Box 87
Driggs, ID 83422
Phone: 208-354-2680
Fax: 208-354-2683

March 26, 2010

L. Scott Rogers, P.E.
President
Aqua Engineering
533 W 2600 S
Suite 275
Bountiful, UT 84010

Dear Mr. Rogers,

I am writing this letter in response to your request for comments on the proposed upgrade to the Teton Valley Water Reclamation Facility.

The two soils that surround the current facility are Zc (Zohner silty clay loam) and Tc (Tepete peat). Neither of these soils are listed as prime, unique, or of statewide importance. They are, however, both hydric soils which would be of local importance. I have included with this letter the hydric classification data sheet.

Since the footprint of the new facility does not exceed the footprint of the old facility the impact to important or sensitive soils will be unchanged.

Sincerely,

Lindsay Markegard

Lindsay Markegard
District Conservationist
NRCS Driggs, ID

Hydric Soils

Teton Area, Idaho and Wyoming

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
Te:					
Tepete mucky peat, shallow	Tepete, shallow	90	Valley floors	Yes	1, 3
	Aquolls	10	Marshes	Yes	2B3, 3
Zc:					
Zohner silty clay loam	Zohner	90	Valley floors	Yes	2B3
	Aquolls, non-calcareous	5	Flood plains	Yes	2B3, 3
	Humaquepts	5	Flood plains	Yes	2B3

Explanation of hydric criteria codes:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
   A. are somewhat poorly drained and have a water table at the surface (0.0 feet) during the growing season, or
   B. are poorly drained or very poorly drained and have either:
      1.) a water table at the surface (0.0 feet) during the growing season if textures are coarse sand, sand, or fine sand in all layers within a depth of 20 inches, or
      2.) a water table at a depth of 0.5 foot or less during the growing season if permeability is equal to or greater than 6.0 in/hr in all layers within a depth of 20 inches, or
      3.) a water table at a depth of 1.0 foot or less during the growing season if permeability is less than 6.0 in/hr in any layer within a depth of 20 inches.
3. Soils that are frequently ponded for long or very long duration during the growing season.
4. Soils that are frequently flooded for long or very long duration during the growing season.

DRIGGS WASTEWATER EXPANSION PROJET
TETON COUNTY, IDAHO
ARCHAEOLOGICAL AND HISTORIC SITES SURVEY REPORT
IDAHO ARCHAEOLOGICAL SURVEY
Stephanie Crockett

Project Name and Statement of Objectives:
This class I cultural resource inventory (record search) is for the **Driggs Wastewater Expansion Project in Teton County, Idaho**. The objective of this record search is to identify previously recorded archaeological and historic properties and cultural resource inventories previously conducted within the area of potential effect (APE) or its vicinity. This is done in accordance with state and federal statutes including 36 CFR 800.

Name and Full Description of the Proposed Undertaking:
The proposed undertaking consists of the expansion of the existing Driggs Wastewater Facility to encompass an additional 6.5 acres on the west edge of the city of Driggs, Idaho (see attached topo).

Location and General Environmental Setting: (See Attached Map)
The APE lies within the Middle Rocky Mountain Physiographic Province, in southeastern Idaho. It lies in the eastern portion of Teton Basin, a broad alluvial valley set between the Teton and Big Hole Mountain Ranges. The elevation of the APE is 6000 ft. above sea level. The APE is situated on the eastern edge of the Teton River floodplain and wetlands just west of the City of Driggs, Idaho

County: Teton
Township, Range, Section: T5N, R45E, Section 34, B.M.
USGS Topographic Map(s): Bates, Idaho 7.5' (1979)

Pre-Field Research

1. Sources of information checked:

[ ] Overviews
[X] National Register
[X] Archaeological site records/map
[ ] Architectural site records/maps
[X] Survey records
[X] Historical Records/maps
[ ] Individuals/Groups with special knowledge
[ ] Ethnographic studies
[ ] Other

On 8/24/06 an archive search was conducted by Catherine Banfill at the State Historic Preservation Office in Boise, Idaho. The search was conducted for T5N R45E, Section 34, Boise Meridian. This search found that no cultural resource inventories had been conducted, and no previously recorded cultural properties exist within the APE.

Expected Historic and Prehistoric Land Use and Site Sensitivity:
Relatively few formal archaeological investigations have been conducted in Teton Basin; however large prehistoric campsites have been recorded near natural warm springs at the south end of Teton Basin (Crockett 2002). Lithic raw material sources are also known in the region (Connor, et al 1995). The valley was utilized historically during the trapper era and was the location for the Pierre's Hole Rendezvous and the well known battle of 1832 (Haines 1955). Most recently, the APE has been used for agriculture, primarily livestock grazing.

Due to the proximity of the Teton River and the probable availability of culturally important edible plants and game animals, the APE was likely utilized prehistorically as a hunting or plant foraging location. Due to the seasonally wet nature of the APE large prehistoric campsites or historic homesteads are not likely however; artifacts and features associated with seasonal use of the area are possible.

Cultural Properties within the Vicinity of the APE
Site No. 10TN48 was recorded in 1995 by N. Peterson and J. Gaston of the Idaho Transportation Department for the *Driggs to Victor Bike Path Project No. STPE-6830(100)* and is the site of the *Teton Valley Branch of the Oregon Shortline Railroad.* Construction of this section of the railroad began in 1913 and was in use by 1920. The line was later acquired by the Union Pacific Railroad and abandoned in the early 1980s at which time the ties and rails were removed. The railroad grade remains intact and is currently used as a paved bike/pedestrian path. The site is situated approximately one mile east of the current APE. There will be **no effect** to the site as a result of the current project.

Site No. 10TN37 (IHSI 81-17889) was first recorded in 1982 by J. McDonald of the USFS for the *Idaho Administrative Sites Inventory.* Site forms were later updated by the Arrowrock Group of Boise, Idaho (2002). The site is the *Caribou Targhee Bunkhouse and Warehouse Compound.* It consisted of a warehouse, bunkhouse, storage shed, machine shed, tack room and several other sheds. The structures and surrounding vegetation have been removed and the land is now used for commercial buildings and parking lots. No evidence for the site remains. There will be **no effect** to this site as a result of the current project.

Attachments

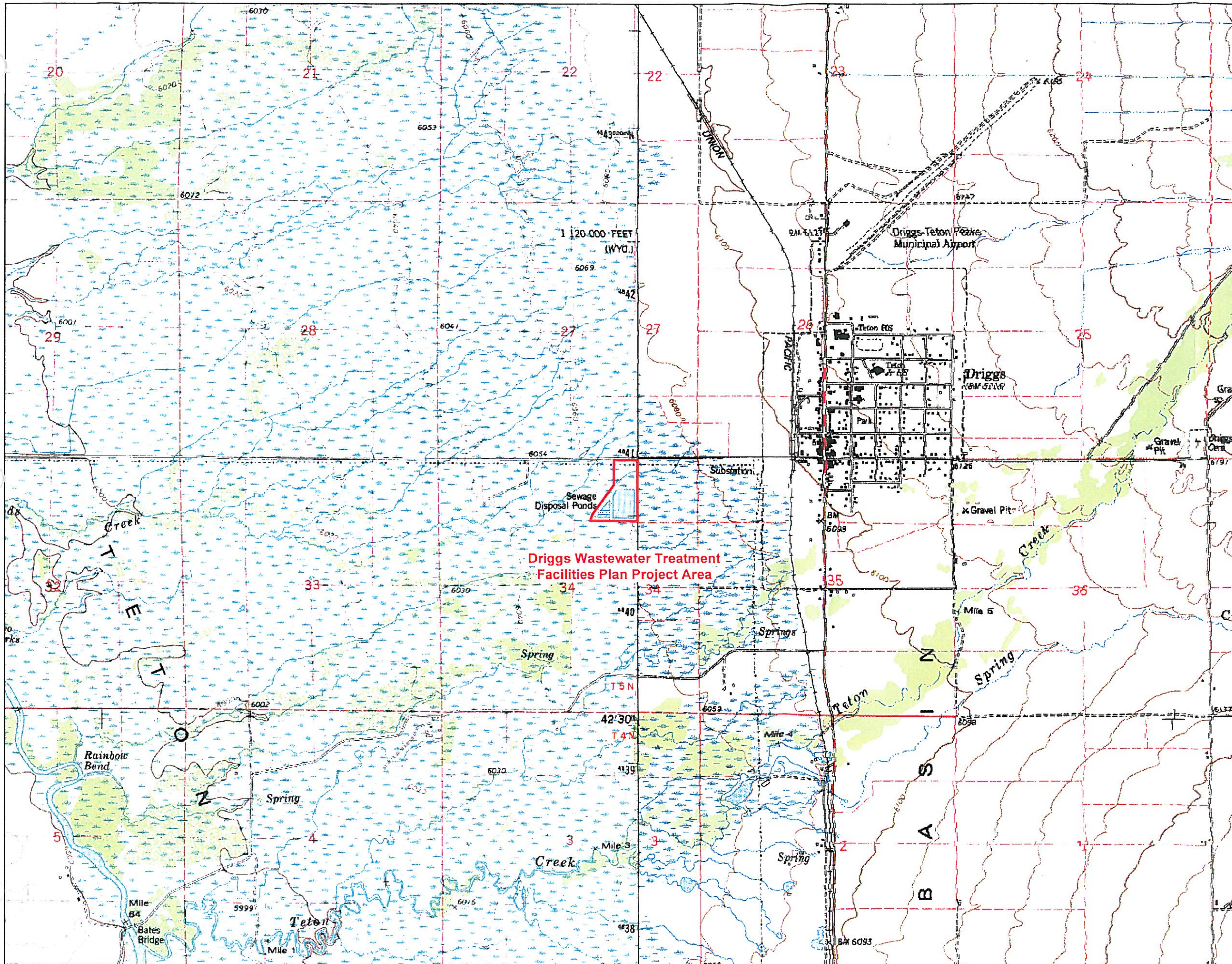
APE Location Map

References

Connor, Melissa A. and Raymond Kunselman.
1995 *Mobility Settlement Patterns, and Obsidian Source Variation in Jackson Hole, Wyoming.* Paper Presented at the Second Biennial Rocky Mountain Anthropological Conference.

Crockett, S.
2002 *Archaeological Testing Report, Sites 10TN52, 10TN53 and 10TN54, for the Teton Springs Golf and Casting Club in Teton County, Idaho.* An unpublished archaeological testing report for the US Army Corps of Engineers, Idaho Falls, Idaho.

Haines, Aubrey eds.
1955 Osborne Russell's Journal of a Trapper. University of Nebraska Press, Lincoln.



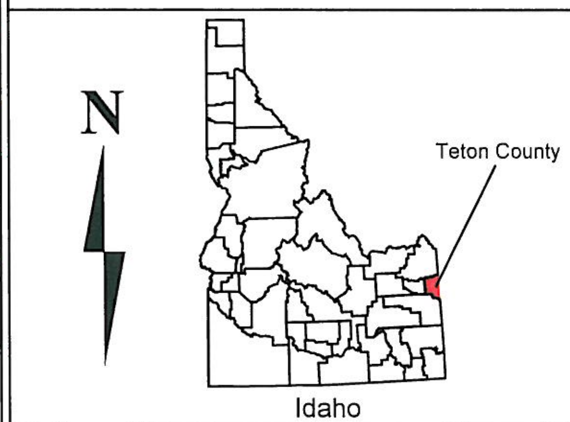
Attachment 1
Location and topography of the
Driggs Wastewater Facilities Plan
project area,
Teton County, Idaho.

T05N, R45E, Sections 34
Bates NE and Driggs NW, Idaho Quadrangles

Approximate Scale: 1" = 2,000 ft

LEGEND

Project Area



research & consulting inc
Biota

P. O. Box 880 - 73 N. Main Suite 3
Victor, Idaho 83455-0880
Phone: 208-787-4215 - Fax: 208-787-4217

APPENDIX
GENERAL REPORT

CITY SEWER BUDGET
&
O&M COST ESTIMATES

	2009	New 2010	New 2011
Salaries & Management			
Salaries	$116,757	$116,757	$120,260
Mangement / City Council	$8,600	$8,600	$8,858
FICA & Medicare	$9,590	$9,590	$9,878
Health Insurance	$24,443	$24,443	$25,176
Retirement	$13,025	$13,025	$13,416
Workers Compensation	$3,000	$3,000	$3,090
Misc. Insurance Expenses	$5,823	$5,823	$5,998
City Hall Operations	$22,000	$22,000	$22,660
Salaries & Management Subtotal	**$203,238**	**$203,238**	**$209,335**
Supplies & Materials			
Office Supplies	$2,600	$2,600	$2,678
Chemicals	$60,000	$30,000	$30,900
Parts for Repairs	$12,000	$20,000	$20,600
Supplies & Materials Subtotal	**$74,600**	**$52,600**	**$54,178**
Training & Safety			
Training & Travel	$4,500	$7,500	$7,725
Safety	$6,000	$8,000	$8,240
Training & Safety Subtotal	**$10,500**	**$15,500**	**$15,965**
Utilities			
General Electricity	$5,000	$7,500	$7,725
WWTP Electricity	$20,000	$46,659	$48,058
Phone	$3,000	$3,000	$3,090
Utilities Subtotal	**$28,000**	**$57,159**	**$58,873**
External Services & Maintenance			
Engineering	$15,000	$15,000	$15,450
Legal & Professional	$4,200	$4,200	$4,326
Minor Repairs	$15,000	$15,000	$15,450
Major Repairs	$50,000	$50,000	$51,500
Lab Testing	$6,000	$6,000	$6,180
Maintenance	$18,000	$18,000	$18,540
Vehicle Replacement	$6,000	$6,000	$6,180
Depreciation	$96,337	$96,337	$99,227
External Services Subtotal	**$210,537**	**$210,537**	**$216,853**
Existing Loans			
SBA Loan #2	$13,140	$13,140	$13,140
700 2004 SWR Bond	$84,960	$84,960	$84,960
Bond - Rural Development	$16,265	$16,265	$16,265
	$10,430	$10,430	$10,430
Loans Subtotal	**$124,795**	**$124,795**	**$124,795**
TOTAL EXPENSES	**$651,670**	**$663,829**	**$680,000**
Net Present Value			$645,314
YEAR	-	-	1

Excluded Expenses

City Hall Project		$50,000		
WWTP Interim Uprades		$250,000		
SWR Bond		$84,960		
Rural Bond		$16,265		
Land Purchase		$3,220		
Huntsman Interceptor Line		$430,000		
Depreciation		$96,337		
		$930,782		
	$1,861,564			

Current Revenue	Reported	Anticipated	Difference
Driggs User Fees	$484,640	**$ 347,760**	**$ 136,880**
Victor User Fees	$107,340	**$ 226,800**	**$ (119,460)**
Interest Income	$46,110	**$50,000**	**$ (3,890)**
Total	$638,090	$624,560	**$ 13,530**

	$484,340
Residential Connections	**515**
Monthly Connection Fee	$31.50
Annual Revenue	**$194,670**
Outside Connections	160
Monthly Connection Fee	$47.25
Annual Revenue	**$90,720**
Total Residential Revenue	**$285,390**
Commercial Revenue	$198,950
Commercial Connections	**118**
Base Fee	$31.50
Base Revenue	**$44,604**
Revenue Unaccounted For	**$154,346**
Charge per 1,000 gallons over 10,000	**$1.30**
kGallons over 10,000	**118,728**
	118,727,692
Daily Extra Gallons	

Driggs Sewer Budget & Proportional WWTP Costs			
	Driggs Total	**Actual**	**Portion Currently**
	Alloted Sewer Budget	**WWTP Portion**	**Shared with Victor**
Salaries & Wages	$116,757	$17,514	$17,514
Mangement / City Council	$8,600	$1,290	$0
FICA & Medicare	$9,590	$1,439	$1,439
Health Insurance	$24,443	$3,666	$3,666
Retirement	$13,025	$1,954	$1,954
Workers Compensation	$3,000	$450	$450
Property/Equipment Insurance	$5,823	$2,912	$0
Postage, Public Supplies	$2,600	$2,600	$0
Training & Travel	$4,500	$2,250	$0
Safety	$6,000	$3,000	$0
General Power	$5,000	$0	$0
WWTP Power	$20,000	$20,000	$20,000
General Engineering Services	$15,000	$7,500	$0
Legal & Professional	$4,200	$2,100	$0
WWTP Chemicals	$60,000	$60,000	$60,000
Telephone	$3,000	$1,200	$1,200
Lab Tests	$6,000	$6,000	$6,000
City Hall Operations	$22,000	$3,300	$0
Parts for Repairs	$12,000	$6,000	$0
Minor Repairs	$15,000	$7,500	$0
Major Repairs	$50,000	$25,000	$0
SBA Loan #1	$10,430	$0	$0
SBA Loan #2	$13,140	$0	$0
700 2004 SWR Bond	$84,960	$84,960	$84,960
Bond- Rural Devlpmt	$16,265	$3,253	$0
Land Purchase	$3,220	$0	$0
Shop Maintenance	$18,000	$1,800	$0
Vehicle Replacement	$6,000	$0	$0
Depreciation	$96,337	$62,700	$0
TOTAL	**$654,890**	**$328,387**	**$197,182**

DRIGGS/VICTOR
INTER-CITY AGREEMENT
FOR WASTEWATER TREATMENT SERVICES

ORIGINAL COPY

DRIGGS/VICTOR
INTER-CITY AGREEMENT
FOR WASTEWATER TREATMENT SERVICES

This AGREEMENT, made and entered into the 13th day of October, 1999, by and between the City of Driggs, an Idaho Municipal Corporation, hereinafter referred to as **"Driggs"**, and the City of Victor, an Idaho Municipal Corporation, hereinafter referred to as **"Victor"**.

WITNESSETH

WHEREAS, **Victor** has no wastewater treatment facility and the governing body of said City desires to provide a wastewater collection and treatment facility for **Victor** and the surrounding area; and

WHEREAS **Driggs** has a wastewater lagoon and treatment facility hereinafter collectively referred to as "Wastewater Facilities", and said Wastewater Facilities are presently being improved and will be of sufficient size and capable of receiving and treating the anticipated wastewater from **Victor** and the surrounding regional area; and

WHEREAS, the parties to this Agreement desire to enter into an agreement in writing whereby **Driggs** will accept and treat the anticipated wastewater from **Victor** and the surrounding regional area delivered to a point to be identified and known hereinafter as the "Major Collection Point";

NOW THEREFORE, in consideration of the mutual covenants and undertakings hereinafter stated, to which each party hereby binds and commits itself, it is agreed as follows:

1) Trunk Line. That **Victor** will install at its sole expense a trunk line extending from its wastewater collection system to a manhole located at station 240+00 to a point approximately midway between **Victor** and **Driggs**, and that **Driggs** will install at its sole expense a trunk line extending from its pressure line to a manhole located at station 240+00, a point approximately midway between **Victor** and **Driggs**. The cost of the manhole located at this point will be paid for by **Victor.** A measuring device to be installed at the most feasible location which has been determined to be approximately station 212+00 at **Victor's** expense, which shall be owned and

operated by **Victor**. The point, at station 240+00 shall be referred to hereinafter as the "Major Collection Point". Any connections made to the new trunk line outside and inside the corporate limits of **Victor**, and up flow from the Major Collection Point, shall be assessed a connection fee per equivalent residential unit for the purpose of funding capital improvements, and **Victor** shall have the obligation and responsibility to collect this fee up flow from the Major Collection Point. Any connections made to the new trunk line outside the corporate limits of **Driggs**, and down flow from the Major Collection Point, shall be assessed a connection fee per equivalent residential unit for the purpose of funding capital improvement, and **Driggs** shall have the obligation and responsibility to collect this fee down flow from the Major Collection Point.

2) Cost Sharing - Treatment Facility. After the 1998-1999 reconstruction, the parties shall share in the future cost of capital improvements to the **Driggs** wastewater treatment facilities including, but not limited to, increasing the capacity of the lagoons adding a new lagoon, or other expansion to increase capacity, both hydraulic or biological. The formula for sharing the cost for such improvements shall be based upon the total volume of wastewater **Victor** has in the calendar year immediately preceding the letting of a bid for such improvements, as measured at the Major Collection Point compared to the total volume of wastewater **Driggs** has for the same time period, as measured at the treatment facilities. **Victor** shall keep accurate records of flow at the Major Collection Point and make the same available to **Driggs** upon request. **Driggs** shall keep accurate records of flow at the main lift station and make the same available to **Victor** upon request.

3) Measuring Devices. The measuring device installed at the 212+00 and the Major Collection Point shall be owned and under the control of and shall be maintained by **Victor**. **Victor** agrees to pay the cost and expense of maintaining such device and **Driggs** shall have the right to verify the meter readings and otherwise inspect said device at anytime. Measuring devices located within **Driggs** collection system, or at the Wastewater Facilities shall be owned and under the control of and shall be maintained by **Driggs**. **Driggs** agrees to pay the cost and expense of maintaining such device and **Victor** shall have the right to verify the meter readings and otherwise inspect said devices at anytime.

4) Connections. Any single connections in excess of ten (10) equivalent residential units made to the trunk line and collection systems outside and inside of the City

limits of **Driggs** and **Victor** shall be made only with the express written consent of both cities. If at any time, the Trunk Line reaches its capacity as a result of additional flows, then both cities shall share in the cost of installing larger lines where necessary. The ratio of participation shall be based on the number of equivalent residential units each party has connected to the Trunk Line, which have contributed to the need for a larger line. If the parties hereto are not able to agree on the proportional ratios, an in stream flow calculation shall be taken manually at the point the Trunk Line connects with the **Driggs** system, and the proportional ratios shall be based upon the actual flows, with the cost of such measurement being shared in the same proportions as are determined for the line increase.

5) <u>Termination - Reimbursement</u>. In the event **Victor** participates in adding capital improvements to the treatment facilities only as indicated above, and then for some reason this Agreement is terminated and **Victor** no longer uses **Driggs'** Wastewater Facilities, then **Driggs** agrees to reimburse **Victor** for its share of said added capital improvement costs less depreciation based upon the average estimated life of said improvements and the number of years said improvements have been in existence as of the date **Victor** discontinues its use of **Driggs'** Wastewater Facilities.

6) <u>Service Area Restrictions</u>. **Driggs** agrees to accept the wastewater passed through the Major Collection Point and from said point to be solely responsible for conveying said wastewater to the **Driggs** Wastewater Facilities and for the treatment and disposal of said wastewater. However, **Driggs** reserves the right to accept or not to accept wastewater from **Victor** if it is determined that the source of any wastewater is in violation of any applicable State or Federal Regulations. **Driggs** shall be responsible for insuring that all sources within the **Driggs** system are in compliance as well, and will have the right to reject any and all wastewater, whether from **Victor** or **Driggs** if the residence, business or other source shall cause a violation of State or Federal regulations.

7) <u>Treatment Fees</u>. Except as otherwise herein stated, **Victor** agrees to pay **Driggs** and **Driggs** agrees to accept from **Victor**, as sole consideration for **Driggs** accepting, conveying, treating, and disposing of wastewater a regular fee for each one thousand (1000) gallons of wastewater measured at the flow measuring device and other service flows estimated to the Main Collection Point. Said fee shall be paid monthly on or before the 10th day of each month for the prior month,

commencing with the month following the first month that wastewater is delivered to the Major Collection Point by **Victor**. The fee is to be established and approved annually by both cities by resolution.

8) Wastewater Strength. For the purpose of controlling the amount of organic load of wastewater coming from pollution sources within the total system, it is agreed that **Victor** and **Driggs** will comply with the Environmental Protection Agency (EPA) requirements for pretreatment standards for existing and new sources of pollution, and the establishment of user charges associated with the treatment of the industrial wastewater. **Victor** and **Driggs** hereby agree to share the necessary cost data to enable the calculation of the costs associated with the treatment of the residential, commercial and industrial wastewater over and above the cost mentioned elsewhere in this Agreement. If at any time, the EPA or any other Federal or State agency requires that wastewater treatment costs should be calculated by some formula other than as herein set forth, then both **Victor** and **Driggs** agree that this Agreement shall be amended so that its fee structure meets said requirement if necessary.

   If any of the rates charged by **Driggs** to **Victor** hereunder are found to be in violation of law or unenforceable then this Agreement shall become immediately terminable by either party and may be so terminated upon giving the other party a written notice of its intent to so terminate, and the date upon which such termination shall take effect, provided however, that it can be no sooner than one year from the date of notice.

9) Uniform Rules. **Victor** and **Driggs** agree that wherever practicable, uniform rules and regulations will be established, including but not limited to the discharge of harmful substances into the wastewater system in excess of minimum standards prescribed; to prohibit storm, surface, or groundwater from entering the wastewater system; and to provide adequate inspection of building, wastewater, and street construction to prevent such from entering the wastewater system.

10) Fee Adjustment. Except as mentioned above, it is further agreed that the fees chargeable to **Victor** by **Driggs** may be adjusted only by reason of an adjustment of charges to **Driggs** users for increase in the operation and maintenance for the treatment of wastewater as of the date of this Agreement. Said current charges for treatment are attached hereto and marked "Exhibit A". Further, such an adjustment in fees is equal for **Driggs** and **Victor** unless special circumstances

exist which would make collection and treatment of either **Victor** or **Driggs** users more expensive.

11) Terms. This Agreement shall remain in effect for a period of Twenty (20) years from the date hereof. It shall continue in effect for additional two (2) year periods thereafter unless terminated by either party by giving the other party a notice of intent to terminate, provided, however, after the initial term, no less than two (2) year notice must be given to terminate.

12) Adoption and Enforcement of Ordinances. **Victor** agrees to adopt rules and ordinances similar to those of **Driggs** as they presently exist and as they may from time to time be amended or added upon, governing the discharge of water or materials of any kind into **Victor's** collection system and to administer and enforce said rules or ordinances. Nothing herein shall, however, require **Victor** to require the removal by its residents of septic tanks, the use of which are discontinued when users connect to **Victor's** wastewater collection system.

13) Damages. All costs, damages, and expenses, including but not limited to administration costs, attorney's fees, and the reasonable value of equipment and employee time incurred by either party to this agreement because of other party's or its residents' failure to abide by this Agreement or failure to comply with applicable rules and ordinances regulating discharge of materials into the wastewater collection system, shall be borne and paid by the party whose discharge creates or causes the damage.

14) Surplus Revenues. Both **Victor** and **Driggs** may utilize any surplus revenues from their 1998-99 wastewater budgets to meet any financial obligations they may have under this Agreement if their present budgets are inadequate to meet said needs. For the fiscal years following, each party will adopt appropriate wastewater budgets or utilize appropriate bonding methods to finance the costs of services rendered or improvements contemplated by this Agreement.

15) Debt Reserve Fund. Both **Victor** and **Driggs** will dedicate such funds as are necessary to create a Debt Reserve Fund pursuant to the contract with DEQ and the attached schedules, entitled "Debt Reserve Fund Schedule". Once the fees set forth on the Debt Reserve Fund Schedule are completely funded, each

City shall hold the collection fees for future capital expenditures as set forth in paragraph 17 below.

16) <u>**Capital Reserve Fund**</u>. Both **Victor** and **Driggs** will dedicate all funds collected from connection fees, that are not otherwise legally obligated, to create a "Capital Reserve Fund". All such funds shall be held for the exclusive purpose of funding capital improvements, which shall include, but not be limited to equipment, rights-of-way, lines and land.

17) <u>**Liabilities**</u>. Each party shall be responsible for their own collection system and trunk lines and each agrees to indemnify and hold the other harmless for loss, damage, demands, or claims of any kind arising from their own actions or neglect.

IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials this Agreement in duplicate on the respective dates indicated below.

CITY OF DRIGGS, IDAHO

by ____________________
Lou Christensen, Mayor

ATTEST:

____
~~City Clerk~~ Councilmen

CITY OF VICTOR, IDAHO

by ____________________
Don Thompson, Mayor

ATTEST:

____
City Clerk

THIS AGREEMENT as executed is hereby approved as being in proper form and compatible with the laws of the State of Idaho.

____
STEPHEN ZOLLINGER, Authorized Attorney
for the City of Driggs

____
PHYLLIS LAMKEN, Authorized Attorney
for the City of Victor

LIFT STATION DATA

LIFT STATION DATA

	Driggs Flow	Victor Flow	Total Flow	Victor %
Oct-05	1,475,300		1,475,300	
Nov-05	2,869,200	2,903,100	5,772,300	0.502936
Dec-05	2,341,200	4,276,100	6,617,300	0.6462
Jan-06	1,740,000	2,135,400	3,875,400	0.551014
Feb-06	1,784,000	3,788,700	5,572,700	0.679868
Mar-06	1,574,700	4,242,000	5,816,700	0.729279
Apr-06	1,792,100	3,645,100	5,437,200	0.6704
May-06	3,159,100	3,726,100	6,885,200	0.541175
Jun-06	6,554,600	5,477,100	12,031,700	0.455222
Jul-06	4,946,700	3,930,700	8,877,400	0.442776
Aug-06	2,138,500	3,778,800	5,917,300	0.638602
Sep-06	2,100,100	3,777,500	5,877,600	0.642694
Oct-06	2,166,500	3,412,900	5,579,400	0.611697
Nov-06	1,414,800	3,152,200	4,567,000	0.690212
Dec-06	3,140,900	2,583,800	5,724,700	0.451342
Jan-07	1,932,700	2,954,600	4,887,300	0.604546
Feb-07	5,869,400	3,637,100	9,506,500	0.382591
Mar-07	3,959,200	4,127,400	8,086,600	0.5104
Apr-07	1,594,100	3,723,100	5,317,200	0.700199
May-07	2,886,000	3,924,200	6,810,200	0.576224
Jun-07	4,020,300	6,357,900	10,378,200	0.612621
Jul-07	1,513,400	4,206,300	5,719,700	0.735406
Aug-07	3,623,300	3,954,200	7,577,500	0.521834
Sep-07	2,242,200	5,490,000	7,732,200	0.710018
Oct-07	2,126,400	4,369,000	6,495,400	0.67263
Nov-07	2,188,900	4,977,900	7,166,800	0.694578
Dec-07	4,346,900	5,011,700	9,358,600	0.535518
Jan-08	4,064,200	4,413,000	8,477,200	0.520573
Feb-08	3,663,300	4,948,800	8,612,100	0.574633
Mar-08	3,353,600	5,126,700	8,480,300	0.604542
Apr-08	3,350,300	5,236,700	8,587,000	0.60984
May-08	3,415,200	5,608,600	9,023,800	0.621534
Jun-08	5,217,100	7,214,400	12,431,500	0.580332
Jul-08	9,383,000	7,485,400	16,868,400	0.443753
Aug-08	3,702,900	8,902,400	12,605,300	0.706243
Sep-08	2,195,900	5,248,300	7,444,200	0.705019
Oct-08	4,336,700	4,310,900	8,647,600	0.498508
Nov-08	7,734,200	4,286,800	12,021,000	0.356609
Dec-08	9,744,800	4,289,500	14,034,300	0.305644
Jan-09	11,893,000	5041300	16,934,300	0.297698
Feb-09	10,290,900	4,586,100	14,877,000	0.308268
Mar-09	8,805,100	5,055,900	13,861,000	0.364757
Apr-09	9,498,200	5,058,200	14,556,400	0.34749
May-09	9,222,200	5,613,600	14,835,800	0.378382

Jun-09	22,226,300	8,467,700	30,694,000	0.275875
Jul-09	17,829,700	10,964,500	28,794,200	0.380788
Aug-09	7,885,300	5,132,000	13,017,300	0.394245
Sep-09	6,392,400	4,693,100	11,085,500	0.423355
Oct-09	6,791,700	4,344,800	11,136,500	0.390141
Nov-09	6,846,300	4,555,000	11,401,300	0.399516
Dec-09	11,933,300	5,177,800	17,111,100	0.302599

	Eff. Tot	Daily Avg.	Infl. Tot	Daily Avg.
Jan-01	5,087,000	164,097	5,909,000	190,613
Feb-01				
Mar-01	4,359,000	140,613	8,006,000	258,258
Apr-01	3,369,000	112,300	6,764,000	225,467
May-01	7,502,000	242,000	7,502,000	242,000
Jun-01	10,377,000	345,900	10,377,000	345,900
Jul-01	8,971,000	289,387	8,971,000	289,387
Aug-01	4,482,000	144,581	7,532,000	242,968
Sep-01	5,843,000	194,767	7,326,000	244,200
Oct-01	6,309,000	203,516	6,309,000	203,516
Nov-01	2,572,000	85,733	5,527,000	184,233
Dec-01	5,046,000	162,774	5,671,000	182,935
Jan-02	5,038,000	162,516	7,020,000	226,452
Feb-02	5,766,000	205,929	6,624,000	236,571
Mar-02	6,653,000	214,613	8,268,000	266,710
Apr-02	5,214,000	173,800	6,743,000	224,767
May-02	4,989,000	160,935	7,165,000	231,129
Jun-02	5,977,000	199,233	11,459,000	381,967
Jul-02	7,847,000	253,129	12,800,000	412,903
Aug-02	6,115,000	197,258	9,918,000	319,935
Sep-02	4,951,000	165,033	6,812,000	227,067
Oct-02	4,974,000	160,452	6,525,000	210,484
Nov-02	6,361,000	212,033	5,785,000	192,833
Dec-02	5,434,000	175,290	6,426,000	207,290
Jan-03	5,719,000	184,484	7,452,000	240,387
Feb-03	4,062,000	145,071	6,453,000	230,464
Mar-03	4,497,000	145,065	7,824,000	252,387
Apr-03	2,747,000	91,567	7,110,000	237,000
May-03	4,505,000	145,323	7,687,000	247,968
Jun-03	7,972,000	265,733	12,710,000	423,667
Jul-03	7,542,000	243,290	13,139,000	423,839
Aug-03	5,756,000	185,677	9,193,000	296,548
Sep-03	5,619,000	187,300	7,570,000	252,333
Oct-03	5,181,000	167,129	6,797,000	219,258
Nov-03	6,051,000	201,700	6,275,000	209,167
Dec-03	6,349,000	204,806	6,504,000	209,806
Jan-04	6,562,000	211,677	6,982,000	225,226
Feb-04	6,363,000	227,250	6,855,000	244,821
Mar-04	7,172,000	231,355	8,047,000	259,581
Apr-04	7,109,000	236,967	7,494,000	249,800
May-04	5,646,000	182,129	7,611,000	245,516
Jun-04	7,380,000	246,000	11,917,000	397,233
Jul-04	7,979,000	257,387	14,318,000	461,871
Aug-04	5,081,000	163,903	10,578,000	341,226
Sep-04	4,581,000	152,700	8,256,000	275,200
Oct-04	4,946,000	159,548	7,676,000	247,613

Nov-04	4,734,000	157,800	6,935,000	231,167
Dec-04	5,098,000	164,452	8,265,000	266,613
Jan-05	4,739,000	152,871	6,897,000	222,484
Feb-05	5,943,000	212,250	8,847,000	315,964
Mar-05	4,721,000	152,290	7,744,000	249,806
Apr-05	8,291,000	276,367	25,392,000	846,400
May-05	4,684,000	151,097	8,267,000	266,677
Jun-05	8,605,000	286,833	15,027,000	500,900
Jul-05	8,291,000	267,452	15,392,000	496,516
Aug-05	4,491,000	144,871	8,710,000	280,968
Sep-05	3,817,000	127,233	7,400,000	246,667
Oct-05	3,774,000	121,742	5,803,000	187,194
Nov-05	4,313,000	143,767	6,107,000	203,567
Dec-05	7,255,000	234,032	9,179,000	296,097
Jan-06	5,746,000	185,355	7,961,000	256,806
Feb-06	5,539,000	197,821	12,436,000	444,143
Mar-06	6,194,000	199,806	8,664,250	279,492
Apr-06	4,177,000	139,233	7,252,000	241,733
May-06	6,353,000	204,935	11,302,000	364,581
Jun-06	10,716,000	357,200	23,345,000	778,167
Jul-06	8,450,000	272,581	6,384,000	205,935
Aug-06	5,076,000	163,742	15,593,000	503,000
Sep-06	4,755,000	158,500	3,751,000	125,033
Oct-06	3,949,000	127,387	6,259,000	201,903
Nov-06	4,784,000	159,467	6,096,000	203,200
Dec-06	6,146,000	198,258	7,105,000	229,194
Jan-07	7,139,000	230,290	6,823,000	220,097
Feb-07	7,816,000	279,143	10,093,000	360,464
Mar-07	8,534,000	275,290	7,799,000	251,581
Apr-07	5,376,000	179,200	7,074,000	235,800
May-07	5,290,000	170,645	7,493,000	241,710
Jun-07	6,292,000	209,733	9,423,000	314,100
Jul-07	6,214,000	200,452	9,480,000	305,806
Aug-07	5,873,000	189,452	7,853,000	253,323
Sep-07	4,705,000	156,833	9,555,000	318,500
Oct-07	6,112,000	197,161	7,331,000	236,484
Nov-07	4,853,000	161,767	7,554,000	251,800
Dec-07	6,354,000	204,968	7,943,000	256,226
Jan-08	8,236,000	265,677	9,633,500	310,758
Feb-08	8,996,000	321,286	9,179,080	327,824
Mar-08	7,674,000	247,548	7,674,000	247,548
Apr-08	7,220,000	240,667	14,645,000	488,167
May-08	16,274,384	524,980	13,209,000	426,097
Jun-08	16,486,000	549,533	15,589,000	519,633
Jul-08	24,956,000	805,032	18,810,000	606,774
Aug-08	19,701,000	635,516	16,057,000	517,968
Sep-08	15,103,000	503,433	15,103,000	503,433

Oct-08	15,641,000	504,548	12,354,000	398,516
Nov-08	14,514,200	483,807	10,732,400	357,747
Dec-08	18,906,000	609,871	18,780,000	605,806
Jan-09	20,104,000	648,516	17,713,000	571,387
Feb-09	17,755,000	634,107	13,687,000	488,821
Mar-09	17,397,000	561,194	14,096,000	454,710
Apr-09	15,942,000	531,400	13,051,000	435,033
May-09	11,025,000	355,645	12,379,000	399,323
Jun-09	23,966,000	798,867	29,755,000	991,833
Jul-09	20,177,000	650,871	28,354,000	914,645
Aug-09	10,063,000	324,613	10,882,000	351,032
Sep-09	8,910,000	297,000	9,040,000	301,333
Oct-09	9,396,000	303,097	8,654,000	279,161
Nov-09	9,394,000	313,133	8,398,000	279,933
Dec-09	12,624,000	407,226	13,051,000	421,000

WRF INFLUENT DATA
&
PILOT PLANT DATA

WWTP DATA

Date	Monthly Effl. BOD (mg/L)	Influent BOD (mg/L)	Monthly Effl. TSS (mg/L)	Influent TSS (mg/L)	Influent Flow MGD	BOD Infl Load #/day	BOD Effl Load #/day	TSS Infl. Load #/day	TSS Effl. Load #/day
Jan-06	65.0	300	14.0	230	0.189	473	102	363	22
Feb-06	68.0	324	11.0	440	0.197	532	112	723	18
Mar-06	45.0	540	11.0	580	0.200	901	75	967	18
Apr-06	7.0	480	14.0	240	0.233	933	14	466	27
May-06	33.0	354	57.0	625	0.365	1078	100	1903	174
Jun-06	37.0	240	26.0	142	0.778	1557	240	921	169
Jul-06	8.0	135	37.0	174	0.597	672	40	866	184
Aug-06	29.0	357	44.0	298	0.246	732	59	611	90
Sep-06	25.0	342	36.0	705	0.474	1352	99	2787	142
Oct-06	80.0	450	66.0	530	0.252	946	168	1114	139
Nov-06	30.0	108	35.0	340	0.235	212	59	666	69
Dec-06	16.0	384	27.0	180	0.385	1233	51	578	87
Jan-07	84.0	342	22.0	204	0.227	647	159	386	42
Feb-07	36.0	222	18.0	164	0.279	517	84	382	42
Mar-07	30.0	192	17.0	150	0.259	415	65	324	37
Apr-07	282.0	360	56.0	470	0.171	513	402	670	80
May-07	39.0	810	56.0	356	0.304	2054	99	903	142
Jun-07	90.0	1050	35.0	354	0.328	2872	246	968	96
Jul-07	46.0	510	38.0	543	0.244	1038	94	1105	77
Aug-07	10.0	420	40.0	455	0.189	662	16	717	63
Sep-07	30.0	430	43.0	854	0.157	563	39	1118	56
Oct-07	45.0	350	44.0	444	0.197	575	74	729	72
Nov-07	20.0	300	48.0	420	0.251	628	42	879	100
Dec-07	23.0	210	28.0	80	0.256	448	49	171	60
Jan-08	25.0	398	6.0	171	0.310	1029	65	442	16
Feb-08	14.1	327	21.0	449	0.316	861	37	1183	55
Mar-08	18.2	178	10.0	179	0.273	404	41	407	23
Apr-08	27.0	466	6.0	218	0.488	1897	110	887	24
May-08	28.0	314	36.0	237	0.486	1273	113	961	146
Jun-08	38.9	239	22.2	80	0.519	1034	168	348	96
Jul-08	33.5	81	40.0	67	0.606	411	169	339	202
Aug-08	29.0	196	9.0	45	0.640	1048	155	240	48
Sep-08	10.7	225	24.0	62	0.389	730	35	201	78
Oct-08	21.4	279	38.0	221	0.504	1171	90	930	160
Nov-08	32.6	360	41.3	314	0.357	1072	97	936	123
Dec-08	65.9	353	27.7	319	0.605	1779	332	1607	140
Jan-09	12.0	182	13.5	290	0.682	1033	68	1648	77
Feb-09	12.8	239	25.0	254	0.655	1305	70	1387	137
Mar-09	15.4	180	19.5	124	0.567	849	73	585	92
Apr-09	25.1	371	15.4	253	0.491	1520	103	1036	63
May-09	20.4	268	29.0	220	0.296	663	50	543	72
Jun-09	28.6	111	10.0	56	1.200	1108	287	560	100
Jul-09	15.7	185	21.1	120	0.447	690	59	447	79
Aug-09	32.0	196	30.5	156	0.265	432	71	345	67
Sep-09	16.7	428	35.2	292	0.279	996	39	679	82
Oct-09	71.3	322	54.0	160	0.214	574	127	286	96
Nov-09	15.4	415	27.0	242	0.251	868	32	506	57
Dec-09	36.9	180	33.0	111	0.388	584	119	358	107

WWTP DATA

Date	Effluent Temp	Monthly Effl. BOD	Weekly Effl. BOD	Influent BOD	Effluent Min pH	Effluent Max pH	Monthly Effl. TSS	Weekly Effl. TSS	Influent TSS	Efflunt NH3	Effluent Nitrate	Effluent Fecal Coliform	Effluent E. Coli	Influent Flow	Residual Chlorine	BOD Removal
	dec C	(mg/L)	(mg/L)	(mg/L)	SU	SU	(mg/L)	(mg/L)	(mg/L)	(ug/L)	(ug/L)	#/100 mL	#/100 mL	MGD	ug/L	%
Jan-06	7.0	65.0	16.2	300	7.1	7.3	14.0	3.5	230	0	0	25.6	19.2	0.189	1.74	78.3%
Feb-06	5.3	68.0	17.0	324	7.2	7.3	11.0	2.7	440	0	0	4.0	5.0	0.197	1.96	79.0%
Mar-06	5.8	45.0	11.2	540	7.1	7.3	11.0	2.7	580	0	0	21.1	12.5	0.200	2.54	91.6%
Apr-06	12.9	7.0	1.7	480	7.0	8.2	14.0	3.5	240	0	0	16.0	20.0	0.233	2.75	98.5%
May-06	18.1	33.0	8.2	354	7.6	8.6	57.0	14.2	625	0	0	4.0	4.0	0.365	2.42	90.0%
Jun-06	19.9	37.0	9.3	240	7.3	9.0	26.0	6.5	142	0	0	7.2	4.0	0.778	2.06	93.0%
Jul-06	22.4	8.0	2.0	135	7.7	8.5	37.0	9.3	174	0	0	4.0	4.0	0.597	2.18	94.0%
Aug-06	18.8	29.0	7.3	357	7.5	8.2	44.0	11.0	298	0.63	4.7	4.0	4.0	0.246	2.49	91.8%
Sep-06	16.6	25.0	6.3	342	7.6	8.3	36.0	9.0	705	0	0	4.0	4.0	0.474	1.27	92.6%
Oct-06	18.2	80.0	20.0	450	7.6	8.6	66.0	16.5	530	0	0	8.0	4.0	0.252	2.50	82.0%
Nov-06	12.2	30.0	7.5	108	7.7	8.2	35.0	8.8	340	0	0	8.0	4.0	0.235	3.40	72.0%
Dec-06	5.4	16.0	4.0	384	7.4	7.6	27.0	6.8	180	0	0	8.0	4.0	0.385	1.38	95.0%
Jan-07	5.3	84.0	21.0	342	7.3	7.5	22.0	5.5	204	0	0	44.8	31.2	0.227	1.04	75.0%
Feb-07	5.5	36.0	9.0	222	7.1	7.5	18.0	4.5	164	22.4	1	56.0	21.6	0.279	2.58	83.0%
Mar-07	8.7	30.0	7.5	192	7.2	7.5	17.0	4.3	150	0	0	5.6	4.8	0.259	1.07	84.0%
Apr-07	17.2	282.0	70.5	360	7.6	9.0	56.0	14.0	470	0	0	4.0	2.8	0.171	0.13	21.0%
May-07	17.7	39.0	9.8	810	7.5	8.2	56.0	14.0	356	0	0	5.6	3.6	0.304	0.14	95.0%
Jun-07	18.8	90.0	22.5	1050	7.6	7.9	35.0	8.8	354	0	0	7.2	6.0	0.328	0.29	91.0%
Jul-07	22.5	46.0	11.5	510	7.4	8.6	38.0	9.5	543	0	0	161.0	101.0	0.244	0.38	90.0%
Aug-07	19.8	10.0	2.5	420	7.3	7.7	40.0	10.0	455	2.2	17.6	0.0	1.0	0.189	0.08	97.0%
Sep-07	13.1	30.0	7.5	430	7.4	7.5	43.0	10.8	854	0	0	80.4	66.2	0.157	0.03	93.0%
Oct-07	12.1	45.0	11.3	350	7.6	7.7	44.0	11.0	444	0	0	3.4	4.0	0.197	0.03	87.0%
Nov-07	13.9	20.0	5.0	300	7.5	8.1	48.0	12.0	420	0	0	0.0	0.2	0.251	0.15	93.0%
Dec-07	6.7	23.0	5.8	210	7.2	7.5	28.0	7.0	80	0	0	1.0	1.0	0.256	0.02	89.0%
Jan-08	5.1	25.0	6.3	398	7.1	7.4	6.0	1.5	171	27.08	1	50.8	7.1	0.310	0.14	93.0%
Feb-08	4.5	14.1	3.5	327	7.1	7.5	21.0	5.3	449	0	0	172.8	31.2	0.316	0.53	95.0%
Mar-08	9.7	18.2	4.5	178	7.4	8.2	10.0	2.5	179	0	0	40.0	32.9	0.273	0.74	89.0%
Apr-08	16.0	27.0	6.8	466	7.8	9.0	6.0	1.5	218	0	0	4.0	2.6	0.488	0.16	95.0%
May-08	12.0	28.0	7.0	314	8.4	8.7	36.0	9.0	237	0	0	4.0	0.0	0.486	0.10	91.0%
Jun-08	18.5	38.9	9.7	239	6.3	8.7	22.2	5.5	80	0	0	11.6	18.8	0.519	0.03	83.0%
Jul-08	21.4	33.5	8.4	81	7.3	7.5	40.0	10.0	67	18.67	1	2200.0	833.3	0.606	0.03	58.0%
Aug-08	20.4	29.0	7.0	196	7.4	7.7	9.0	2.0	45	0	0	25.7	9.5	0.640	1.31	85.0%
Sep-08	14.7	10.7	2.7	225	7.2	7.6	24.0	6.0	62	23.61	1	374.4	1.0	0.389	0.04	95.0%
Oct-08	9.0	21.4	5.3	279	7.7	8.1	38.0	9.5	221	0	0	18.2	1.8	0.504	0.63	92.0%
Nov-08	6.9	32.6	8.2	360	7.8	8.0	41.3	43.5	314	0	0	25.5	5.9	0.357	0.20	90.0%
Dec-08	7.8	65.9	16.5	353	7.7	8.0	27.7	6.9	319	28.81	1	2.6	2.6	0.605	0.00	81.0%
Jan-09	8.3	12.0		182	7.5	7.8	13.5		290	0	0	14.9	9.5	0.682	0.02	93.4%
Feb-09	6.2	12.8		239	7.0	7.4	25.0		254	0	0	7.9	1.0	0.655	0.00	94.7%
Mar-09	9.3	15.4		180	7.0	7.4	19.5		124	0	0	14.8	4.2	0.567	0.14	91.4%
Apr-09	13.5	25.1		371	6.6	7.6	15.4		253	0	0	1.0	1.0	0.491	0.09	93.2%
May-09	19.4	20.4		268	6.3	7.7	29.0		220	0	0	18.4	5.9	0.296	0.13	92.4%

Jun-09	18.6	28.6		111	6.8	7.0	10.0		56	12.75	12.9	592.7	176.4	1.200	0.00	74.1%
Jul-09	21.9	15.7		185	6.8	8.2	21.1		120	0	0	129.1	16.5	0.447	0.08	91.5%
Aug-09	19.6	32.0		196	6.8	8.1	30.5		156	14.61	0	73.5	4.8	0.265	0.77	83.6%
Sep-09	17.3	16.7		428	7.1	8.1	35.2		292	10.61	0	55.3	4.4	0.279	0.15	96.1%
Oct-09	13.1	71.3		322	6.7	7.9	54.0		160	0	0	174.5	1.0	0.214	0.68	77.8%
Nov-09	9.7	15.4		415	7.2	8.2	27.0		242	5.7	24.6	14.8	1.0	0.251	0.13	96.3%
Dec-09	8.5	36.9		180	7.1	7.8	33.0		111	0	0	165.4	125.9	0.388	0.02	79.5%

DRIGGS PILOT SAMPLE RESULTS

BOD & TSS					LAB												Comments
Date	**BOD Infl.**	**TSS Infl.**	**BOD Eff.**	**TSS Eff.**	**Ammonia Infl**	**Ammonia Efl**	**Nitrate Infl**	**Nitrate Efl**	**pH Infl**	**pH Effl**	**Temp Infl**	**Temp Effl**	**Turbidity Infl**	**Turbidity Effl**	**HW Temp**	**D.O.**	**Meter Liters**
6/10/2008	202.9 mg/L	163.6 mg/L	11.4 mg/L	2.8 mg/L													
6/12/2008	374.9 mg/L	630.0 mg/L	6.3 mg/L	.5 mg/L													
6/17/2008	240.8 mg/L	142.3 mg/L	6.6 mg/L	5.5 mg/L	32.7 mg/L			14.8 mg/L		6.00		19.50 C					
6/19/2008	341.4 mg/L	139.4 mg/L	15.7 mg/L	7.0 mg/L	17.3 mg/L			11.3 mg/L	7.36	8.22	21.30 C	22.60 C					
6/24/2008	115.6 mg/L	85.0 mg/L	5.6 mg/L	1.2 mg/L	16.7 mg/L			9.1 mg/L	7.78	8.09	25.80 C	26.80 C			10.40 C	.55 mg/L	
6/26/2008	140.1 mg/L	123.5 mg/L	4.2 mg/L	.6 mg/L	14.3 mg/L			7.0 mg/L	6.40	7.33	20.30 C	21.90 C					
7/1/2008	174.3 mg/L	5.8 mg/L	102.0 mg/L	6.0 mg/L	13.7 mg/L			7.3 mg/L							11.40 C	.71 mg/L	
7/3/2008									7.63	8.36	21.30 C	22.30 C					
7/8/2008	152.8 mg/L	163.3 mg/L	1.9 mg/L	2.2 mg/L	14.6 mg/L			7.5 mg/L	7.10	7.70	25.80 C	26.00 C			12.68 C	.65 mg/L	
7/10/2008	73.6 mg/L	50.0 mg/L	2.4 mg/L	.4 mg/L	11.8 mg/L		.2 mg/L	.1 mg/L							12.20 C	.90 mg/L	130,961
7/15/2008															12.40 C	.55 mg/L	144,979
7/17/2008	116.1 mg/L	153.0 mg/L	3.4 mg/L	2.1 mg/L				7.8 mg/L							12.80 C	.70 mg/L	154,106
7/22/2008															13.50 C	.46 mg/L	162,738
7/23/2008																	164,846
7/29/2008																	182,253
7/31/2008																	5,199
8/5/2008	142.1 mg/L	168.0 mg/L	5.3 mg/L	4.9 mg/L													
8/7/2008	246.6 mg/L	86.0 mg/L	6.5 mg/L	7.5 mg/L	24.0 mg/L	.1 mg/L	1.0 mg/L	7.8 mg/L							14.70 C	.45 mg/L	22,704
8/11/2008															14.00 C	.38 mg/L	9,218
8/12/2008	111.9 mg/L	143.6 mg/L	10.8 mg/L	35.0 mg/L	29.6 mg/L	.1 mg/L	1.0 mg/L	10.7 mg/L	7.10	7.20	31.20 C	32.10 C	280.00	7.36	15.10 C	.32 mg/L	38,289
8/13/2008													4.29				
8/14/2008	200.9 mg/L	163.3 mg/L	5.0 mg/L	7.0 mg/L					7.10	7.10	26.50 C	26.50 C	220.60	5.74	15.10 C	.34 mg/L	44,040
8/19/2008	269.4 mg/L	110.0 mg/L	4.4 mg/L	4.3 mg/L	25.1 mg/L	.1 mg/L	1.0 mg/L	8.8 mg/L									
8/19/2008	352.9 mg/L	88.9 mg/L	3.7 mg/L	4.0 mg/L	34.0 mg/L	.2 mg/L											
8/21/2008	165.7 mg/L	105.0 mg/L	6.7 mg/L	7.3 mg/L	25.7 mg/L	.1 mg/L	1.0 mg/L	8.9 mg/L									
8/26/2008	182.4 mg/L	144.2 mg/L	15.0 mg/L	21.6 mg/L	30.8 mg/L	.1 mg/L	1.0 mg/L	8.6 mg/L									
8/28/2008	252.4 mg/L	190.5 mg/L	16.0 mg/L	30.2 mg/L	27.6 mg/L	.1 mg/L	1.0 mg/L	9.6 mg/L							16.70 C	.45 mg/L	84,280
9/2/2008	317.4 mg/L	130.0 mg/L	19.1 mg/L	41.0 mg/L	28.7 mg/L	.1 mg/L	1.0 mg/L	16.0 mg/L	7.10	8.20	13.80 C	11.90 C	108.10	48.02	15.20 C	.19 mg/L	99,314
9/4/2008	139.1 mg/L	129.0 mg/L	16.2 mg/L	42.0 mg/L	32.0 mg/L	.1 mg/L	1.0 mg/L	12.2 mg/L	6.80	8.30	16.90 C	12.80 C	100.70	33.06	14.90 C	.29 mg/L	104,447
9/9/2008	239.6 mg/L	66.0 mg/L	26.3 mg/L	55.0 mg/L	29.6 mg/L	.1 mg/L	1.0 mg/L	20.7 mg/L	7.00	7.80			180.70	35.90	14.60 C	.25 mg/L	119,475
9/11/2008	279.5 mg/L	304.0 mg/L	25.4 mg/L	99.0 mg/L	41.0 mg/L	.5 mg/L	1.0 mg/L	24.2 mg/L	6.90	7.60	13.30 C	12.70 C	143.10	73.28			124,772
9/16/2008	260.8 mg/L	340.0 mg/L	21.6 mg/L	32.0 mg/L	38.0 mg/L	.1 mg/L	1.0 mg/L	20.1 mg/L	6.70	7.50	17.40 C	16.80 C	169.80	65.64	14.60 C	.27 mg/L	149,745
9/17/2008									6.80	7.80	17.30 C	15.30 C	118.80	87.10	14.90 C	.46 mg/L	158,953
9/18/2008									7.00	7.80	16.70 C	15.60 C	183.10	84.64	15.30 C	.35 mg/L	168,844
9/20/2008									7.10	7.60	17.00 C	17.00 C	131.80	89.84	15.50 C	.62 mg/L	171,591
9/22/2008									7.30	8.00	17.70 C	17.30 C	198.30	70.87	15.30 C		
9/23/2008	320.8 mg/L	284.3 mg/L	37.9 mg/L	150.7 mg/L	43.6 mg/L	.1 mg/L	1.0 mg/L	19.5 mg/L									
9/24/2008									7.10	7.70	15.30 C	15.80 C	133.30	76.53	14.60 C	.41 mg/L	192,927
9/25/2008	289.2 mg/L	294.2 mg/L	68.8 mg/L	200.0 mg/L	31.4 mg/L	.2 mg/L	1.0 mg/L	26.8 mg/L									
10/9/2008	288.9 mg/L	332.6 mg/L	11.1 mg/L	50.0 mg/L	40.6 mg/L	.0 mg/L	.0 mg/L	21.4 mg/L	7.20	8.10	13.50 C	13.30 C	78.04	46.73	14.10 C	.35 mg/L	205,178
10/16/2008	339.5 mg/L	258.8 mg/L	44.0 mg/L	11.0 mg/L	39.2 mg/L	.05 mg/L	1.0 mg/L	7.3 mg/L	7.30	8.00	13.80 C	13.30 C	102.10	42.62	12.40 C	.25 mg/L	19,817
10/21/2008	278.6 mg/L	221.2 mg/L	21.4 mg/L	38.0 mg/L	41.9 mg/L	.05 mg/L	1.0 mg/L	12.6 mg/L	7.30	8.10	14.00 C	14.00 C	186.90	85.94	12.50 C	.50 mg/L	34,949
10/23/2008	239.7 mg/L	104.4 mg/L	16.7 mg/L	53.5 mg/L	34.9 mg/L	.05 mg/L	1.0 mg/L	14.2 mg/L	7.40	7.90	12.20 C	11.50 C	208.20	42.60	12.10 C	.37 mg/L	37,334
10/28/2008	244.7 mg/L	242.0 mg/L	30.3 mg/L	104.0 mg/L	40.4 mg/L	.05 mg/L	1.0 mg/L	12.6 mg/L	7.30	7.80	11.90 C	12.50 C	173.30	60.00	11.50 C	.44 mg/L	51,499
10/30/2008	175.2 mg/L	136.0 mg/L	22.2 mg/L	102.0 mg/L	36.3 mg/L	.05 mg/L	1.0 mg/L	15.1 mg/L	7.10	7.70	10.60 C	11.60 C	136.00	129.00	11.30 C	.29 mg/L	57,201
11/4/2008	257.5 mg/L	170.8 mg/L	22.4 mg/L	63.5 mg/L	36.4 mg/L	.05 mg/L	1.0 mg/L	15.4 mg/L	7.40	7.80	10.30 C	11.70 C	175.30	63.00			71,939
11/6/2008	220.8 mg/L	266.9 mg/L	29.4 mg/L	86.9 mg/L					7.40	8.10	8.70 C	8.30 C	129.40	73.50	11.20 C	.50 mg/L	77,752